

[Lined Pipes](#)[Spacers](#)[Flanged Elbows](#)[Flanged Tees](#)[Flanged Lateral Tees](#)[Flanged Crosses](#)[Instrument Tees](#)[Reducers](#)[Valves](#)[Blind Flanges](#)[Expansion Joints](#)[Spectacle Blinds](#)[Nozzle Liners / Dip Pipes](#)[Hoses](#)[Special Parts](#)[Accessories](#)

DIN Catalogue

Our product range

Innovation and quality. BAUM.



Headquarters in Birkenfeld

BAUM lined piping GmbH, located in Birkenfeld (Germany), manufactures the complete range of PTFE-lined piping components - according to both DIN and ANSI standards.

For more than 30 years, BAUM lined piping GmbH is a family-owned and independent company which enjoys flexibility resulting from quick decisions. With excellent products, global references and several subsidiaries around the world, we are a strong and reliable partner.

What does BAUM offer to you?

First priority:

QUALITY

We offer long-term safety and security to chemical manufacturers:

- certification according DIN EN ISO 9001
- qualification according Pressure Equipment Directive (PED)
- FDA-conformity of the lining

Urgent solutions to challenges:

FLEXIBILITY

We react quickly to individual requirements:

- quick decisions and a motivated team
- state of the art technical production equipment, including internal steel fabrication

Individual piping systems:

INDIVIDUALITY

For some issues in plant manufacturing there are no standard solutions. We thrive to offer solutions to special or difficult applications. We are able to achieve this via:

- vertical integration of our production
- in-house construction
- independence from subcontractors

The BAUM-Team

Your contacts at BAUM!

The success of BAUM GmbH is based on the individual customer care in every stage of the joint business relationship. An experienced and committed sales team accompanies and supports

you from your initial contact to the successful completion of your order, including the after-sales management — in Germany and worldwide.

**Sales Manager**

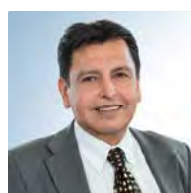
Frank Escher
Tel. +49. 7082. 94 36 - 60
fescher@baum-lined-piping.com

**Sales Scandinavia, South-East Asia and Australia**

Claudia Schmauß
Tel. +49. 7082. 94 36 - 63
cschmauss@baum-lined-piping.com

**Sales Northwestern Germany**

Peter Schardt
Tel. +49. 6479. 91 18 46
pschardt@baum-lined-piping.com

**Sales Near and Middle East, Spain, Latin America**

Miguel Arrieta
Tel. +49. 7082. 94 36 - 73
marrieta@baum-lined-piping.com

**Sales Northwestern Germany**

Christian Schardt
Tel. +49. 6479. 6 98 60 50
cschardt@baum-lined-piping.com

**Sales Asia and Italy**

Lin Lin
Tel. +49. 7082. 94 36 - 67
llin@baum-lined-piping.com

**Sales South/Eastern Germany, Switzerland and Austria**

Michael Schmauß
Tel. +49. 7082. 94 36 - 15
mschmauss@baum-lined-piping.com

**Sales China**

Jian Xu
Tel. +86. 21. 57 21 97 98
jxu@baum-lined-piping.com

**Sales France and Benelux**

Kerstin Lausch
Tel. +49. 7082. 94 36 - 16
klausch@baum-lined-piping.com

**Sales USA**

Gary Morrison jr.
Tel. +1. 713. 5 39 44 93
g2morrison@baum-lined-piping.com

**Sales Switzerland and Spain**

Catharina Müller
Tel. +49. 7082. 94 36 - 61
cmueller@baum-lined-piping.com

**Sales USA**

Gary Morrison sen.
Tel. +1. 304. 343 25 71
gmorrison@baum-lined-piping.com

**Sales Eastern Europe**

Igor Petrov
Tel. +49. 7082. 94 36 - 19
ipetrov@baum-lined-piping.com

**Sales USA**

Jeff Farrell
Tel. +1. 716. 909 79 89
jfarrell@baum-lined-piping.com



Lined Pipes



Lined Pipes (PN 10)

Our pipes are lined, totally stainless, with paste-extruded PTFE and fully automatically tested. Depending on the nominal pipe size, we produce pipes up to a total length of 6 metres.



Lined Pipes (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Flanges according to EN 1092-1:

- fix-loose
- fix-fix
- loose-loose

Other pressure levels:

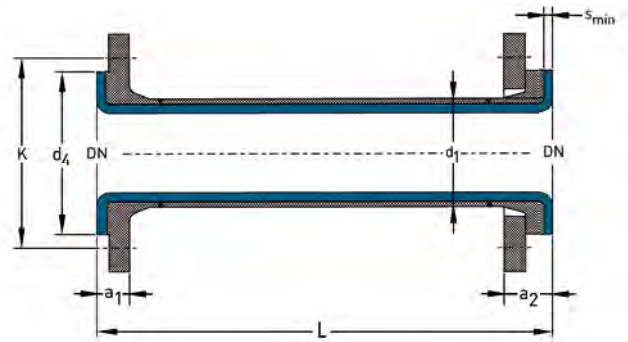
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

Optional extras:

- final painting
- non-destructive testing



DN	L (mm)		d ₁ (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₁ (mm)	a ₂ (mm)	No. of bolts x thread	Weights	
	min.	max.								Pipe (ca. kg/m)	Pair of flanges (ca. kg)
15	84	6000	26.9	45	65	3.0	19.0	29.0	4 x M12	1.8	1.5
20	90	6000	26.9	58	75	3.0	21.0	33.0	4 x M12	1.8	2.3
25	90	6000	33.7	68	85	3.0	21.0	33.0	4 x M12	2.5	2.8
32	103	6000	42.4	78	100	3.0	21.0	35.0	4 x M16	3.2	4.2
40	103	6000	48.3	88	110	3.0	21.0	35.0	4 x M16	3.7	4.9
50	107	6000	60.3	102	125	3.0	21.0	39.0	4 x M16	5.1	6.0
65	107	6000	76.1	122	145	3.0	21.0	39.0	8 x M16	6.6	7.3
80	109	6000	88.9	138	160	3.0	23.0	39.0	8 x M16	8.4	9.0
100	113	6000	114.3	158	180	3.0	23.0	43.0	8 x M16	11.9	10.8
125	120	6000	139.7	188	210	4.0	26.0	44.0	8 x M16	16.8	14.4
150	130	6000	168.3	212	240	4.5	26.5	48.5	8 x M20	22.9	18.3
200	133	6000	219.1	268	295	5.0	29.0	49.0	8 x M20	39.9	26.2
250	141	4000	273.0	320	350	5.0	31.0	53.0	12 x M20	50.1	34.9
300	141	4000	323.9	370	400	5.0	31.0	53.0	12 x M20	65.8	40.3
350	145	3000	355.6	430	460	5.0	31.0	57.0	16 x M20	74.6	57.1
400	162	3000	406.4	482	515	5.0	31.0	61.0	16 x M24	83.0	73.5
450	164	2000	457.0	532	565	5.0	33.0	65.0	20 x M24	93.6	83.4
500	168	2000	508.0	585	620	5.0	33.0	69.0	20 x M24	104.2	98.6

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		▢	▢	▢
40	●	●	▢	▢	▢
50	●	●	▢	▢	▢
80	●	●	▢	▢	▢
100	●	●	▢	▢	▢
150	●	●	▢	▢	▢
200	●	●	▢	▢	▢
250	●	●	▢	▢	▢
300	●	●	▢	▢	▢

Nominal pipe sizes over DN 500 up to DN 1000 and other construction types on request.

L = Total length

L_{min} = Minimum total length with flanges fix-loose

d₁ = Outer diameter of the pipe

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₁ = Minimum length with fixed flange (Type 11) and s_{min}

a₂ = Minimum length with loose flange (Types 04/34) and s_{min}

Technical data valid for the pressure level PN 10.

a₁ and a₂ depend on construction type and lining thickness.

Vacuum resistance:

▢ = full vacuum

▢ = limited vacuum

▢ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

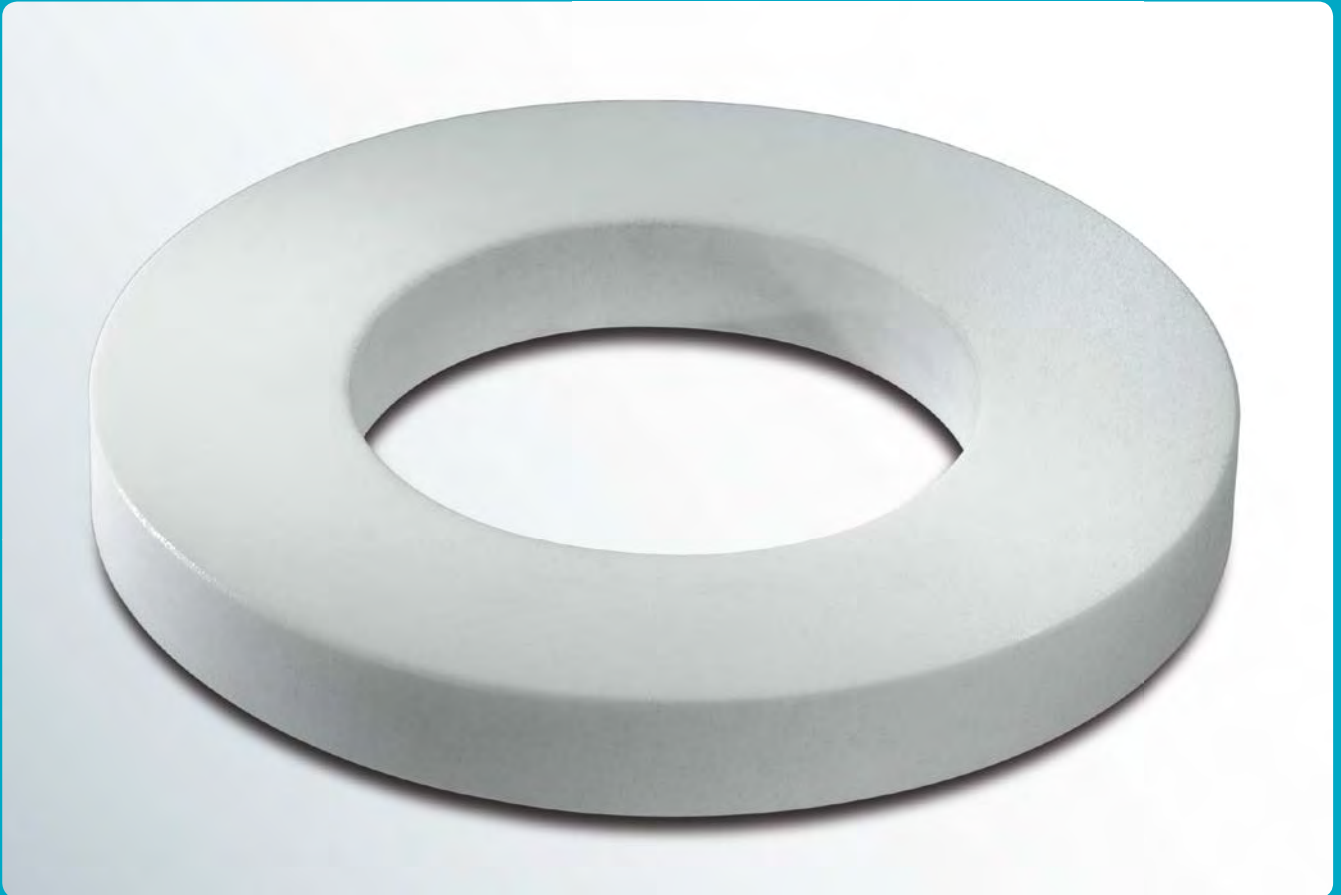


Spacers



Spacers Form F (PN 10)

Flexible up to the last millimetre! For total lengths up to 25 mm we recommend Spacers Form F made of solid PTFE.



Spacers Form F (PN 10)

Materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

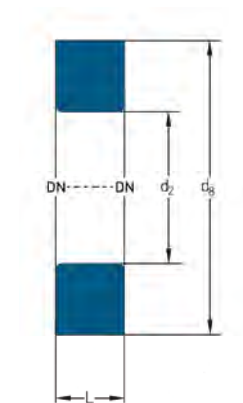
Other pressure levels:

- PN 16
- PN 25
- PN 40

Optional extras:

- reinforcement ring
- filled PTFE

Spacers Form F are also available as **Inclined Spacers** with various angles.



DN	L (mm)		d ₂ ≈ (mm)	d ₈ (mm)	Weights (ca. g/mm)
	min.	max.			
15	10	15	16	50	3.8
20	10	20	16	60	5.6
25	10	20	22	70	7.5
32	10	20	31	82	9.7
40	10	20	37	92	12.0
50	10	20	48	107	15.4
65	10	20	64	127	20.3
80	10	20	76	142	24.3
100	10	20	101	162	27.1
125	10	20	125	192	35.9
150	10	20	153	218	40.7
200	10	20	201	273	57.6
250	10	20	254	328	72.7
300	10	20	303	378	86.2
350	10	25	333	438	136.7
400	10	25	382	488	155.7
450	10	25	430	536	172.9
500	10	25	480	594	206.7

Different nominal pipe sizes
and total lengths on request.

L = Total length

d₂ = Inner diameter

d₈ = Outer diameter

Technical data valid for the pressure level PN 10.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		▢	▢	▢
40	●		▢	▢	▢
50	●		▢	▢	▢
80	●		▢	▢	▢
100	●		▢	▢	▢
150	●		▢	▢	▢
200	●		▢	▢	▢
250	●		▢	▢	▢
300	●		▢	▢	▢

Vacuum resistance:

▢ = full vacuum

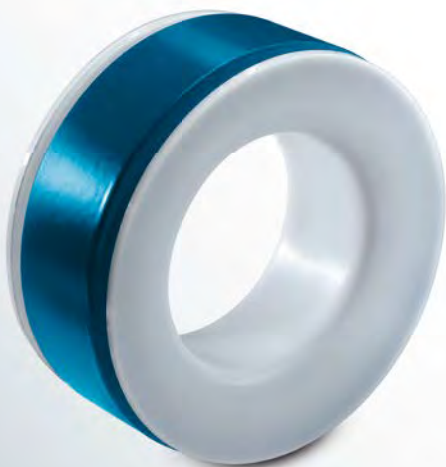
▢ = limited vacuum

▢ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Spacers Form G (PN 10)

For total lengths from 10 – 100 mm we reinforce the Spacers Form G with a resilient metal core.



Spacers Form G (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Other pressure levels:

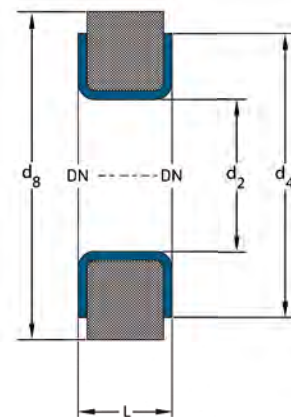
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)		d ₂ ≈ (mm)	d ₄ (mm)	d ₈ (mm)	Weights at L _{max} (ca. kg/pc.)
	min.	max.				
15	10	60	16	45	50	0.7
20	10	60	16	58	60	1.1
25	10	60	22	68	70	1.4
32	10	60	31	78	82	1.9
40	10	60	37	88	92	2.3
50	10	60	48	102	107	3.0
65	10	60	64	122	127	3.9
80	10	70	76	138	142	5.5
100	15	70	101	158	162	6.1
125	15	70	125	188	192	7.8
150	20	80	153	212	218	10.0
200	20	80	201	268	273	14.0
250	20	90	254	320	328	20.0
300	20	90	303	370	378	23.7
350	25	90	333	430	438	37.6
400	25	90	382	482	488	44.2
450	25	100	430	532	536	55.0
500	25	100	480	585	594	65.9

Different nominal pipe sizes
and total lengths on request.

L = Total length

d₂ = Inner diameter

d₄ = Raised face diameter

d₈ = Outer diameter

Technical data valid for the pressure level PN 10.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		☐	☐	☐
40	●		☐	☐	☐
50	●		☐	☐	☐
80	●		☐	☐	☐
100	●		☐	☐	☐
150	●		☐	☐	☐
200	●		☐	☐	☐
250	●		☐	☐	☐
300	●		☐	☐	☐

Vacuum resistance:

☐ = full vacuum

☐ = limited vacuum

☐ = no vacuum

Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

Spacers Form H (PN 10)

Spacers Form H with a total length up to 250 mm consist of a pressure-resistant, but lightweight metal core with interior lining.



Spacers Form H (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Other pressure levels:

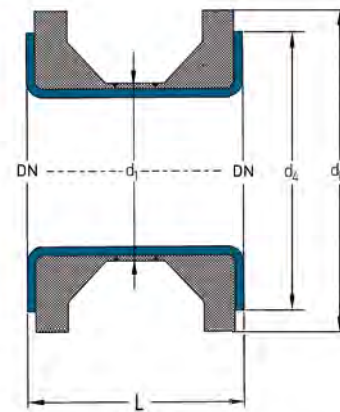
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension

Optional extras:

- final painting
- non-destructive testing



DN	L (mm)		d ₁ (mm)	d ₄ (mm)	d ₈ (mm)	Weights at L _{max} (ca. kg/pc.)
	min.	max.				
15	60	100	26.9	45	45	0.4
20	60	100	26.9	58	60	0.8
25	60	100	33.7	68	70	1.0
32	60	100	42.4	78	82	1.3
40	60	100	48.3	88	92	1.6
50	60	100	60.3	102	107	2.1
65	60	100	76.1	122	127	2.8
80	70	125	88.9	138	142	3.7
100	70	125	114.3	158	162	4.7
125	70	150	139.7	188	192	6.7
150	80	150	168.3	212	218	8.2
200	80	200	219.1	268	273	14.5
250	80	200	273.0	320	328	19.0
300	80	200	323.9	370	378	23.4
350	80	250	355.6	430	438	38.3
400	90	250	406.4	482	488	46.8
450	100	250	457.0	532	532	50.9
500	100	250	508.0	585	594	59.9

Different nominal pipe sizes
and total lengths on request.

L = Total length

d₁ = Outer diameter of the steel pipe

d₄ = Raised face diameter

d₈ = Outer diameter

Technical data valid for the pressure level PN 10.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		☐	☐	☐
40	●		☐	☐	☐
50	●		☐	☐	☐
80	●		☐	☐	☐
100	●		☐	☐	☐
150	●		☐	☐	☐
200	●		☐	☐	☐
250	●		☐	☐	☐
300	●		☐	☐	☐

Vacuum resistance:

☐ = full vacuum

☐ = limited vacuum

☐ = no vacuum

Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

Inclined Spacers (PN 10)

Flexible in every situation! The Inclined Spacers can be delivered in any angle, tapered on one side only or on both sides.



Inclined Spacers (PN 10)

Material:

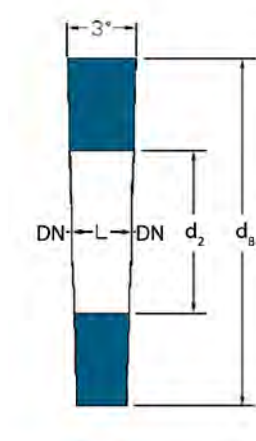
- PTFE (virgin or conductive)

Other pressure levels:

- PN 16
- PN 25
- PN 40

The standard angle for Inclined Spacer is 3°, other angles on request.

DN	L	d ₂	d ₈	Weights
	(mm)	≈ (mm)	(mm)	(ca. kg/pc.)
25	15	22	70	0.1
32	15	31	82	0.1
40	15	37	92	0.2
50	20	48	107	0.3
65	20	64	127	0.4
80	20	76	142	0.5
100	25	101	162	0.7
125	25	125	192	0.9
150	35	153	218	1.4
200	35	201	273	2.0



Different nominal pipe sizes and total lengths on request.

L = Total length

d₂ = Inner diameter

d₈ = Outer diameter

Technical data valid for the pressure level PN 10.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●	●	☐	☐	☐
40	●	●	☐	☐	☐
50	●	●	☐	☐	☐
80	●	●	☐	☐	☐
100	●	●	☐	☐	☐
150	●	●	☐	☐	☐
200	●	●	☐	☐	☐

Vacuum resistance:

☐ = full vacuum

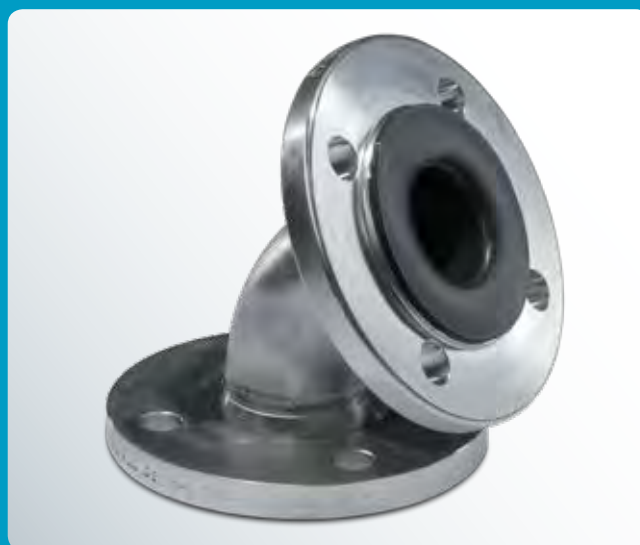
☐ = limited vacuum

☐ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.



Flanged Elbows



Flanged Elbows 30° / 60° (PN 10)

The BAUM manufacturing technology with paste-extruded PTFE liner assures an optimum flow and an exact fitting of the liner in the elbow segment.



Flanged Elbows 30° / 60° (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Flanges according to EN 1092-1:

- fix-loose
- fix-fix
- loose-loose

Other pressure levels:

- PN 16
- PN 25
- PN 40

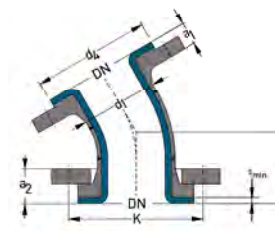
Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

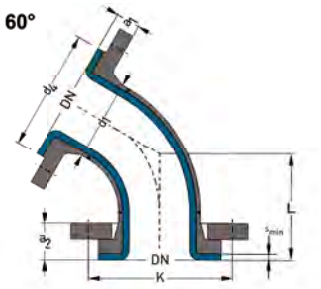
Optional extras:

- final painting
- non-destructive testing

30°



60°



DN	L (mm)		d ₁ (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₁ (mm)	a ₂ (mm)	No. of bolts x thread	Weights	
	30°	60°								30° (ca. kg/pc.)	60° (ca. kg/pc.)
15	50	63	26.9	45	65	3.0	19.0	29.0	4 x M12	1.8	1.8
20	57	75	26.9	58	75	3.0	21.0	33.0	4 x M12	2.5	2.6
25	61	84	33.7	68	85	3.0	21.0	33.0	4 x M12	3.0	3.1
32	70	98	42.4	78	100	3.0	21.0	35.0	4 x M16	4.5	4.6
40	73	108	48.3	88	110	4.0	22.0	36.0	4 x M16	5.3	5.5
50	70	93	60.3	102	125	4.0	22.0	40.0	4 x M16	6.5	6.8
65	75	104	76.1	122	145	4.0	22.0	40.0	8 x M16	8.1	8.5
80	85	120	88.9	138	160	4.0	24.0	40.0	8 x M16	10.0	10.7
100	96	145	114.3	158	180	4.5	24.5	44.5	8 x M16	12.4	13.7
125	106	166	139.7	188	210	4.5	26.5	44.5	8 x M16	17.0	19.4
150	118	188	168.3	212	240	5.0	27.0	49.0	8 x M20	22.1	25.7
200	145	240	219.1	268	295	6.0	30.0	50.0	8 x M20	34.5	42.4
250	168	286	273.0	320	350	6.0	32.0	54.0	12 x M20	47.7	60.1
300	190	330	323.9	370	400	6.0	32.0	54.0	12 x M20	59.7	78.7
350	210	375	355.6	430	460	7.0	33.0	59.0	16 x M20	81.4	105.1
400	235	425	406.4	482	515	7.5	33.5	63.5	16 x M24	106.2	138.3
450	255	460	457.0	532	565	5.0	33.0	65.0	20 x M24	121.3	158.5
500	275	508	508.0	585	620	5.0	33.0	69.0	20 x M24	146.6	193.8

Nominal pipe sizes over DN 500 up to DN 1000
and other construction types on request.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		▢	▢	▢
40	●		▢	▢	▢
50	●		▢	▢	▢
80	●		▢	▢	▢
100	●		▢	▢	▢
150	●		▢	▢	▢
200	●		▢	▢	▢
250	●		▢	▢	▢
300	●		▢	▢	▢

Vacuum resistance:

- ▢ = full vacuum
- ▢ = limited vacuum
- ▢ = no vacuum

Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

L = Total length

d₁ = Outer diameter of the elbow

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₁ = Minimum length with fixed flange (Type 11) and s_{min}

a₂ = Minimum length with loose flange (Types 04/34)

and s_{min}

Technical data valid for the pressure level PN 10.

a₁ and a₂ depend on construction type and lining thickness.

Flanged Elbows 45° / 90° (PN 10)

The BAUM manufacturing technology with paste-extruded PTFE liner assures an optimum flow and an exact fitting of the liner in the elbow segment.



Flanged Elbows 45° / 90° (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Flanges according to EN 1092-1:

- fix-loose
- fix-fix
- loose-loose

Other pressure levels:

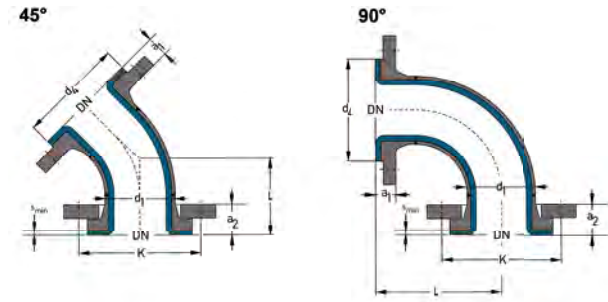
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

Optional extras:

- final painting
- non-destructive testing



DN	L (mm)				d ₁ (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₁ (mm)	a ₂ (mm)	No. of bolts x thread	Weights	
	45°	90°	45°	90°								45° Form C (ca. kg/pc.)	90° Form A (ca. kg/pc.)
	Form C	Form A	Form D	Form B									
	Type 3 (standard sizes)		Type 5 (special sizes)										
15	use Form D	use Form B	60	85	26.9	45	65	3.0	19.0	29.0	4 x M12	1.8	1.9
20			65	95	26.9	58	75	3.0	21.0	33.0	4 x M12	2.5	2.6
25			70	110	33.7	68	85	3.0	21.0	33.0	4 x M12	3.1	3.2
32			80	130	42.4	78	100	3.0	21.0	35.0	4 x M16	4.5	4.7
40			90	150	48.3	88	110	4.0	22.0	36.0	4 x M16	5.4	5.7
50	80	120	105	180	60.3	102	125	4.0	22.0	40.0	4 x M16	6.6	7.0
65	85	140	120	220	76.1	122	145	4.0	22.0	40.0	8 x M16	8.3	8.9
80	100	165	135	255	88.9	138	160	4.0	24.0	40.0	8 x M16	10.4	11.5
100	115	205	165	320	114.3	158	180	4.5	24.5	44.5	8 x M16	13.1	16.1
125	135	245	190	385	139.7	188	210	4.5	26.5	44.5	8 x M16	18.2	21.0
150	150	285	215	440	168.3	212	240	5.0	27.0	49.0	8 x M20	23.9	28.3
200	190	365	270	570	219.1	268	295	6.0	30.0	50.0	8 x M20	38.4	48.2
250	225	450	335	710	273.0	320	350	6.0	32.0	54.0	12 x M20	53.9	68.8
300	260	525	385	830	323.9	370	400	6.0	32.0	54.0	12 x M20	69.2	121.6
350	290	600	430	910	355.6	430	460	7.0	33.0	59.0	16 x M20	93.2	168.4
400	325	680	480	1030	406.4	482	515	7.5	33.5	63.5	16 x M24	122.3	225.5
450	355	705	575	1140	457.0	532	565	5.0	33.0	65.0	20 x M24	139.9	256.2
500	390	830	585	1300	508.0	585	620	5.0	33.0	69.0	20 x M24	170.2	404.0

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		☐	☐	☐
40	●		☐	☐	☐
50	●		☐	☐	☐
80	●		☐	☐	☐
100	●		☐	☐	☐
150	●		☐	☐	☐
200	●		☐	☐	☐
250	●		☐	☐	☐
300	●		☐	☐	☐

Vacuum resistance:

- ☐ = full vacuum
- ☐ = limited vacuum
- ☐ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Nominal pipe sizes over DN 500 up to DN 1000 and other construction types on request.

L = Total length

d₁ = Outer diameter of the elbow

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flange thickness

a₁ = Minimum length with fixed flange (Type 11) and s_{min}

a₂ = Minimum length with loose flange (Types 04/34) and s_{min}

Technical data valid for the pressure level PN 10.

a₁ and a₂ depend on construction type and lining thickness.

Types of Flanged Elbows 90°:

- from nominal pipe size DN 300 as two-part component
- nominal pipe size DN 450 Form B as three-part component
- from nominal pipe size DN 500 as three-part component



Flanged Tees



Flanged Tees (PN 10)

The one-piece design with PFA or PP lining assures a perfect flow in the base body and at the outlet. The manufacturing of our one-piece Flanged Tees is done by injection moulding. For Flanged Tees with nominal

pipe sizes larger than DN_i 100, we rely on our approved paste liner. Both manufacturing technologies assure a special smooth and easy-to-clean surface.



Flanged Tees (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- up to nominal pipe size DN₁ 100 (one-piece): PFA (virgin or conductive)
- up to nominal pipe size DN₁ 100 (one-piece): PP
- from nominal pipe size DN₁ 125 (one-piece): on request
- from nominal pipe size DN₁ 125 (two-piece): PTFE (virgin or conductive)

Flanges according to EN 1092-1 (reading order A-B-C):

- combinations of fixed flanges
- combinations of loose flanges
- combinations of fixed and loose flanges

Other pressure levels:

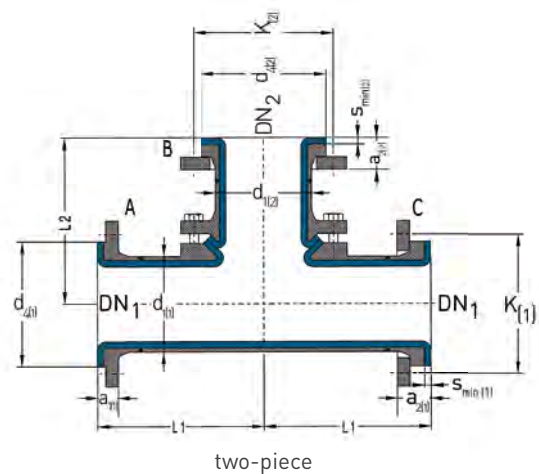
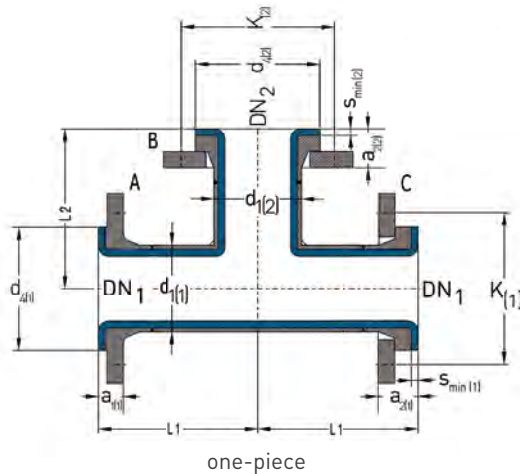
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

Optional extras:

- final painting
- non-destructive testing



DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min(1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min(2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
15	15	85	85	26.9	45	65	4.0	20.0	30.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	2.7
20	15	95	85	26.9	58	75	4.0	22.0	34.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	3.6
20	20	95	95	26.9	58	75	4.0	22.0	34.0	26.9	58	75	4.0	22.0	34.0	4 x M12	4 x M12	4.0
25	15	110	85	33.7	68	85	4.0	22.0	34.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	4.3
25	20	110	95	33.7	68	85	4.0	22.0	34.0	26.9	58	75	4.0	22.0	34.0	4 x M12	4 x M12	4.7
25	25	110	110	33.7	68	85	4.0	22.0	34.0	33.7	68	85	4.0	22.0	34.0	4 x M12	4 x M12	5.0
32	15	130	85	42.4	78	100	4.0	22.0	36.0	26.9	45	65	4.0	20.0	30.0	4 x M16	4 x M12	6.0
32	20	130	100	42.4	78	100	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	6.4
32	25	130	110	42.4	78	100	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	6.7
32	32	130	130	42.4	78	100	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	7.7
40	20	150	100	48.3	88	110	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	7.3
40	25	150	110	48.3	88	110	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	7.6
40	32	150	130	48.3	88	110	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	8.6
40	40	150	150	48.3	88	110	4.0	22.0	36.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	9.1
50	25	120	110	60.3	102	125	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	8.8
50	32	120	130	60.3	102	125	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	9.8
50	40	120	150	60.3	102	125	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	10.3
50	50	120	120	60.3	102	125	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	4 x M16	4 x M16	11.0

continued on the next page

Flanged Tees (PN 10)

DN ₁	DN ₂	L ₁	L ₂	d ₁₍₁₎	d ₄₍₁₎	K ₍₁₎	s _{min (1)}	a ₁₍₁₎	a ₂₍₁₎	d ₁₍₂₎	d ₄₍₂₎	K ₍₂₎	s _{min (2)}	a ₁₍₂₎	a ₂₍₂₎	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
65	25	140	110	76.1	122	145	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	10.7
65	32	140	130	76.1	122	145	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	8 x M16	4 x M16	11.6
65	40	140	150	76.1	122	145	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	12.1
65	50	140	120	76.1	122	145	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	12.9
65	65	140	140	76.1	122	145	4.0	22.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	13.9
80	25	165	110	88.9	138	160	4.0	24.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	13.2
80	40	165	150	88.9	138	160	4.0	24.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	14.7
80	50	165	120	88.9	138	160	4.0	24.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	15.4
80	65	165	140	88.9	138	160	4.0	24.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	16.5
80	80	165	165	88.9	138	160	4.0	24.0	40.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	17.7
100	25	205	110	114.3	158	180	4.0	24.0	44.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	16.9
100	50	205	120	114.3	158	180	4.0	24.0	44.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	19.1
100	65	205	140	114.3	158	180	4.0	24.0	44.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	20.2
100	80	205	165	114.3	158	180	4.0	24.0	44.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	21.4
100	100	205	205	114.3	158	180	4.0	24.0	44.0	114.3	158	180	4.0	24.0	44.0	8 x M16	8 x M16	23.4
125	65	245	140	139.7	188	210	6.0	28.0	46.0	76.1	122	145	3.0	21.0	39.0	8 x M16	8 x M16	34.2
125	80	245	165	139.7	188	210	6.0	28.0	46.0	88.9	138	160	3.0	23.0	39.0	8 x M16	8 x M16	36.3
125	100	245	205	139.7	188	210	6.0	28.0	46.0	114.3	158	180	3.0	23.0	43.0	8 x M16	8 x M16	39.9
125	125	245	245	139.7	188	210	6.0	28.0	46.0	139.7	188	210	4.0	26.0	44.0	8 x M16	8 x M16	45.3
150	80	285	165	168.3	212	240	6.0	28.0	50.0	88.9	138	160	3.0	23.0	39.0	8 x M20	8 x M16	44.5
150	100	285	205	168.3	212	240	6.0	28.0	50.0	114.3	158	180	3.0	23.0	43.0	8 x M20	8 x M16	48.1
150	125	285	245	168.3	212	240	6.0	28.0	50.0	139.7	188	210	4.0	26.0	44.0	8 x M20	8 x M16	53.4
150	150	285	285	168.3	212	240	6.0	28.0	50.0	168.3	212	240	4.5	26.5	48.5	8 x M20	8 x M20	62.2
200	100	365	205	219.1	268	295	6.0	30.0	50.0	114.3	158	180	3.0	23.0	43.0	8 x M20	8 x M16	70.6
200	125	365	245	219.1	268	295	6.0	30.0	50.0	139.7	188	210	4.0	26.0	44.0	8 x M20	8 x M16	76.0
200	150	365	285	219.1	268	295	6.0	30.0	50.0	168.3	212	240	4.5	26.5	48.5	8 x M20	8 x M20	84.7
200	200	365	365	219.1	268	295	6.0	30.0	50.0	219.1	268	295	5.0	29.0	49.0	8 x M20	8 x M20	100.2
250	125	450	245	273.0	320	350	7.5	33.5	55.5	139.7	188	210	4.0	26.0	44.0	12 x M20	8 x M16	99.9
250	150	450	285	273.0	320	350	7.5	33.5	55.5	168.3	212	240	4.5	26.5	48.5	12 x M20	8 x M20	108.6
250	200	450	365	273.0	320	350	7.5	33.5	55.5	219.1	268	295	5.0	29.0	49.0	12 x M20	8 x M20	124.1
250	250	450	450	273.0	320	350	7.5	33.5	55.5	273.0	320	350	5.0	31.0	53.0	12 x M20	12 x M20	142.0
300	150	525	285	323.9	370	400	7.5	33.5	55.5	168.3	212	240	4.5	26.5	48.5	12 x M20	8 x M20	136.9
300	200	525	365	323.9	370	400	7.5	33.5	55.5	219.1	268	295	5.0	29.0	49.0	12 x M20	8 x M20	152.4
300	250	525	450	323.9	370	400	7.5	33.5	55.5	273.0	320	350	5.0	31.0	53.0	12 x M20	12 x M20	170.3
300	300	525	525	323.9	370	400	7.5	33.5	55.5	323.9	370	400	5.0	31.0	53.0	12 x M20	12 x M20	188.2
350	200	600	365	355.6	430	460	8.0	34.0	60.0	219.1	268	295	5.0	29.0	49.0	16 x M20	8 x M20	190.3
350	250	600	450	355.6	430	460	8.0	34.0	60.0	273.0	320	350	5.0	31.0	53.0	16 x M20	12 x M20	208.2
350	300	600	525	355.6	430	460	8.0	34.0	60.0	323.9	370	400	5.0	31.0	53.0	16 x M20	12 x M20	226.1
350	350	600	600	355.6	430	460	8.0	34.0	60.0	355.6	430	460	5.0	31.0	57.0	16 x M20	16 x M20	260.4

continued on the next page

Flanged Tees (PN 10)

DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min (1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min (2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
400	250	680	450	406.4	482	515	7.0	33.0	63.0	273.0	320	350	5.0	31.0	53.0	16 x M24	12 x M20	256.1
400	300	680	525	406.4	482	515	7.0	33.0	63.0	323.9	370	400	5.0	31.0	53.0	16 x M24	12 x M20	274.0
400	350	680	600	406.4	482	515	7.0	33.0	63.0	355.6	430	460	5.0	31.0	57.0	16 x M24	16 x M20	308.3
400	400	680	680	406.4	482	515	7.0	33.0	63.0	406.4	482	515	5.0	31.0	61.0	16 x M24	16 x M24	351.4
450	300	680	525	457.0	532	565	8.0	36.0	68.0	323.9	370	400	5.0	31.0	53.0	20 x M24	12 x M20	289.5
450	350	680	600	457.0	532	565	8.0	36.0	68.0	355.6	430	460	5.0	31.0	57.0	20 x M24	16 x M20	323.7
450	400	680	680	457.0	532	565	8.0	36.0	68.0	406.4	482	515	5.0	31.0	61.0	20 x M24	16 x M24	366.9
450	450	680	680	457.0	532	565	8.0	36.0	68.0	457.0	532	565	5.0	33.0	65.0	20 x M24	20 x M24	389.7
500	300	830	525	508.0	585	620	8.0	36.0	72.0	323.9	370	400	5.0	31.0	53.0	20 x M24	12 x M20	351.2
500	350	830	600	508.0	585	620	8.0	36.0	72.0	355.6	430	460	5.0	31.0	57.0	20 x M24	16 x M20	385.5
500	400	830	680	508.0	585	620	8.0	36.0	72.0	406.4	482	515	5.0	31.0	61.0	20 x M24	16 x M24	428.6
500	450	830	680	508.0	585	620	8.0	36.0	72.0	457.0	532	565	5.0	33.0	65.0	20 x M24	20 x M24	451.4
500	500	830	830	508.0	585	620	8.0	36.0	72.0	508.0	585	620	5.0	33.0	69.0	20 x M24	20 x M24	497.5

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length
 d₁ = Outer diameter of the pipe
 d₄ = Raised face diameter
 K = Bolt circle diameter
 s_{min} = Minimum flare thickness
 a₁ = Minimum length with fixed flange (Type 11) and s_{min}
 a₂ = Minimum length with loose flange (Types 04/34) and s_{min}
 Technical data valid for the pressure level PN 10.
 a1 and a2 depend on construction type and lining thickness.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●				
		●			
40	●				
		●			
50	●				
		●			
80	●				
		●			
100	●				
		●			
150	●				
		●			
200	●				
		●			
250	●				
		●			
300	●				
		●			

Vacuum resistance:

 = full vacuum
 = limited vacuum
 = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.



Flanged Lateral Tees



Flanged Lateral Tees 45° (PN 10)

The one-piece design with PFA or PP lining offers a low-resistance flow through the entire component by a streamlined geometry.



Flanged Lateral Tees 45° (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PFA (virgin or conductive)
- PP

Flanges according to EN 1092-1

(reading order A-B-C):

- combinations of fixed flanges
- combinations of loose flanges
- combinations of fixed and loose flanges

Other pressure levels:

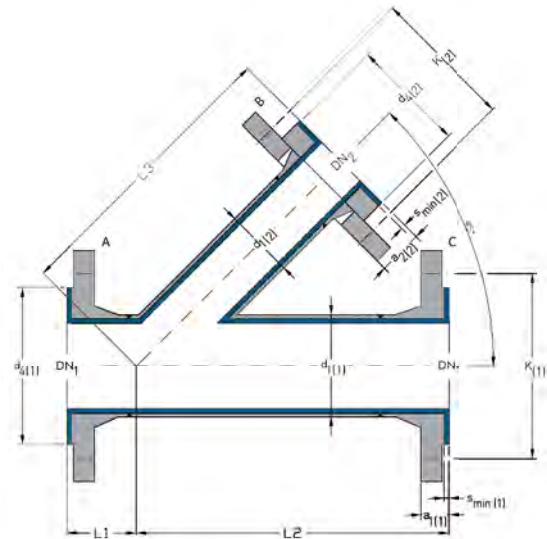
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

Optional extras:

- final painting
- non-destructive testing



DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	L ₃ (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min (1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min (2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/ pc.)
																	DN ₁	DN ₂	
25	15	60	160	160	33.7	68	85	4.0	22.0	34.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	4.2
25	20	60	160	160	33.7	68	85	4.0	22.0	34.0	26.9	58	75	4.0	22.0	34.0	4 x M12	4 x M12	4.7
25	25	60	160	160	33.7	68	85	4.0	22.0	34.0	33.7	68	85	4.0	22.0	34.0	4 x M12	4 x M12	5.0
32	15	60	200	180	42.4	78	100	4.0	22.0	36.0	26.9	45	65	4.0	20.0	30.0	4 x M16	4 x M12	5.8
32	20	60	200	180	42.4	78	100	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	6.2
32	25	60	200	180	42.4	78	100	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	6.6
32	32	60	200	200	42.4	78	100	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	7.6
40	20	90	210	180	48.3	88	110	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	7.0
40	25	90	210	180	48.3	88	110	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	7.4
40	32	90	210	200	48.3	88	110	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	8.3
40	40	90	210	200	48.3	88	110	4.0	22.0	36.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	8.8
50	25	50	190	190	60.3	102	125	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	8.2
50	32	50	190	220	60.3	102	125	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	9.2
50	40	50	190	220	60.3	102	125	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	9.7
50	50	50	190	230	60.3	102	125	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	4 x M16	4 x M16	10.7
65	25	70	280	220	76.1	122	145	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	10.3
65	32	70	280	240	76.1	122	145	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	8 x M16	4 x M16	11.4
65	40	70	280	240	76.1	122	145	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	11.8
65	50	70	280	260	76.1	122	145	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	12.9
65	65	70	280	280	76.1	122	145	4.0	22.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	14.1
80	25	60	270	230	88.9	138	160	4.0	24.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	12.5
80	40	60	270	250	88.9	138	160	4.0	24.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	14.0
80	50	60	270	250	88.9	138	160	4.0	24.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	15.0
80	65	60	270	270	88.9	138	160	4.0	24.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	16.2
80	80	60	270	270	88.9	138	160	4.0	24.0	40.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	17.3
100	25	115	295	250	114.3	158	180	4.0	24.0	44.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	15.9
100	50	115	295	270	114.3	158	180	4.0	24.0	44.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	18.4
100	65	115	295	295	114.3	158	180	4.0	24.0	44.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	19.6
100	80	115	295	295	114.3	158	180	4.0	24.0	44.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	20.7
100	100	115	295	295	114.3	158	180	4.0	24.0	44.0	114.3	158	180	4.0	24.0	44.0	8 x M16	8 x M16	22.3

continued on the next page

Flanged Lateral Tees 45° (PN 10)

DN ₁	DN ₂	Flanged Lateral Tees 45° (PN 10)							
		fix-fix-fix	fix-fix-loose	fix-loose-fix	loose-fix-fix	fix-loose-loose	loose-loose-fix	loose-fix-Los	loose-loose-loose
25	15	●	●	●	●	●	●	●	●
25	20	●	●	●	●	-	●	●	-
25	25	●	-	-	●	-	-	-	-
32	15	●	●	●	●	●	●	●	●
32	20	●	●	●	●	●	●	●	●
32	25	●	●	●	●	●	●	●	●
32	32	●	●	●	●	●	●	●	●
40	20	●	●	●	●	●	●	●	●
40	25	●	●	●	●	●	●	●	●
40	32	●	-	●	●	-	●	●	-
40	40	●	-	●	●	-	●	-	-
50	25	●	-	●	●	-	●	-	-
50	32	●	●	-	-	-	-	-	-
50	40	●	●	-	-	-	-	-	-
50	50	●	●	-	-	-	-	-	-
65	25	●	●	●	●	●	●	●	●
65	32	●	●	●	●	●	●	●	●
65	40	●	●	●	●	●	●	●	●
65	50	●	●	●	●	●	●	●	●
65	65	●	●	●	●	●	●	●	●
80	25	●	●	●	●	●	●	●	●
80	40	●	●	●	●	●	●	●	●
80	50	●	●	●	●	●	●	●	●
80	65	●	●	●	-	-	-	-	-
80	80	●	●	●	-	-	-	-	-
100	25	●	●	●	●	●	●	●	●
100	50	●	●	●	●	●	●	●	●
100	65	●	●	●	●	●	●	●	●
100	80	●	●	●	●	-	●	●	-
100	100	●	●	●	●	-	●	●	-

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length

d₁ = Outer diameter of the pipe

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₁ = Minimum length with fixed flange (Type 11) and s_{min}

a₂ = Minimum length with loose flange (Types 04/34) and s_{min}

Technical data valid for the pressure level PN 10.

a₁ and a₂ depend on construction type and lining thickness.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●				
		●			
40	●				
		●			
50	●				
		●			
80	●				
		●			
100	●				
		●			

Vacuum resistance:

 = full vacuum

 = limited vacuum

 = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.



Flanged Crosses



Flanged Crosses (PN 10)

The one-piece design with PFA or PP lining assures a perfect flow in all four directions. The manufacturing of our one-piece Flanged Crosses is done by injection moulding. For Flanged Crosses with nominal pipe sizes larger

than DN₁ 100, we rely on our approved paste liner. Both manufacturing technologies assure a specially smooth and easy-to-clean surface.



Flanged Crosses (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- up to nominal pipe size DN₁ 100 (one-piece): PFA (virgin or conductive)
- up to nominal pipe size DN₁ 100 (one-piece): PP
- from nominal pipe size DN₁ 125 (one-piece): on request
- from nominal pipe size DN₁ 125 (three-piece): PTFE (virgin or conductive)

Flanges according to EN 1092-1 (reading order A-B-C-D):

- combinations of fixed flanges
- combinations of loose flanges
- combinations of fixed and loose flanges

Other pressure levels:

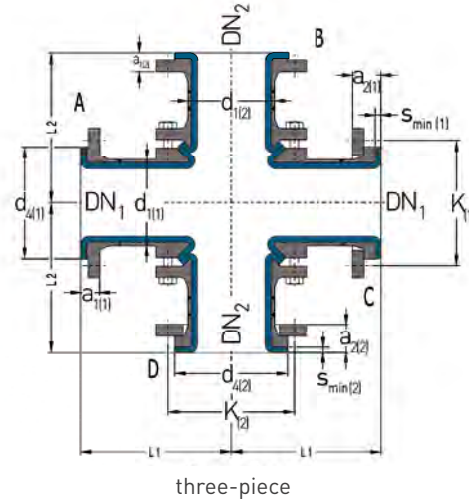
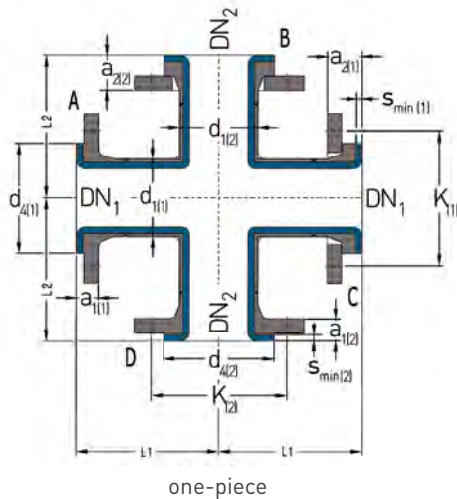
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

Optional extras:

- final painting
- non-destructive testing



DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	d ₁₍₁₎ (mm)	d ₁₍₂₎ (mm)	K ₁₍₁₎ (mm)	s _{min(1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₂₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min(2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
15	15	85	85	26.9	45	65	4.0	20.0	30.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	3.5
20	15	95	85	26.9	58	75	4.0	22.0	34.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	4.3
20	20	95	95	26.9	58	75	4.0	22.0	34.0	26.9	58	75	4.0	22.0	34.0	4 x M12	4 x M12	5.2
25	15	110	85	33.7	68	85	4.0	22.0	34.0	26.9	45	65	4.0	20.0	30.0	4 x M12	4 x M12	5.0
25	20	110	95	33.7	68	85	4.0	22.0	34.0	26.9	58	75	4.0	22.0	34.0	4 x M12	4 x M12	5.8
25	25	110	110	33.7	68	85	4.0	22.0	34.0	33.7	68	85	4.0	22.0	34.0	4 x M12	4 x M12	6.5
32	15	130	85	42.4	78	100	4.0	22.0	36.0	26.9	45	65	4.0	20.0	30.0	4 x M16	4 x M12	6.6
32	20	130	100	42.4	78	100	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	7.5
32	25	130	110	42.4	78	100	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	8.1
32	32	130	130	42.4	78	100	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	9.8
40	20	150	100	48.3	88	110	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	4 x M16	4 x M12	8.4
40	25	150	110	48.3	88	110	4.0	22.0	36.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	9.0
40	32	150	130	48.3	88	110	4.0	22.0	36.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	10.7
40	40	150	150	48.3	88	110	4.0	22.0	36.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	11.5
50	25	120	110	60.3	102	125	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	4 x M16	4 x M12	10.2
50	32	120	130	60.3	102	125	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	4 x M16	4 x M16	11.8
50	40	120	150	60.3	102	125	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	4 x M16	4 x M16	12.7
50	50	120	120	60.3	102	125	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	4 x M16	4 x M16	13.8

continued on the next page

Flanged Crosses (PN 10)

DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min (1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min (2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
65	25	140	110	76.1	122	145	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	12.0
65	32	140	130	76.1	122	145	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	8 x M16	4 x M16	13.6
65	40	140	150	76.1	122	145	4.0	22.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	14.5
65	50	140	120	76.1	122	145	4.0	22.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	15.7
65	65	140	140	76.1	122	145	4.0	22.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	17.5
80	25	165	110	88.9	138	160	4.0	24.0	40.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	14.4
80	40	165	150	88.9	138	160	4.0	24.0	40.0	48.3	88	110	4.0	22.0	36.0	8 x M16	4 x M16	17.0
80	50	165	120	88.9	138	160	4.0	24.0	40.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	18.1
80	65	165	140	88.9	138	160	4.0	24.0	40.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	19.9
80	80	165	165	88.9	138	160	4.0	24.0	40.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	22.4
100	25	205	110	114.3	158	180	4.0	24.0	44.0	33.7	68	85	4.0	22.0	34.0	8 x M16	4 x M12	18.0
100	50	205	120	114.3	158	180	4.0	24.0	44.0	60.3	102	125	4.0	22.0	40.0	8 x M16	4 x M16	21.7
100	65	205	140	114.3	158	180	4.0	24.0	44.0	76.1	122	145	4.0	22.0	40.0	8 x M16	8 x M16	23.5
100	80	205	165	114.3	158	180	4.0	24.0	44.0	88.9	138	160	4.0	24.0	40.0	8 x M16	8 x M16	26.0
100	100	205	205	114.3	158	180	4.0	24.0	44.0	114.3	158	180	4.0	24.0	44.0	8 x M16	8 x M16	29.6
125	65	245	140	139.7	188	210	6.0	28.0	46.0	76.1	122	145	3.0	21.0	39.0	8 x M16	8 x M16	44.7
125	80	245	165	139.7	188	210	6.0	28.0	46.0	88.9	138	160	3.0	23.0	39.0	8 x M16	8 x M16	48.9
125	100	245	205	139.7	188	210	6.0	28.0	46.0	114.3	158	180	3.0	23.0	43.0	8 x M16	8 x M16	55.7
125	125	245	245	139.7	188	210	6.0	28.0	46.0	139.7	188	210	4.0	26.0	44.0	8 x M16	8 x M16	66.4
150	80	285	165	168.3	212	240	6.0	28.0	50.0	88.9	138	160	3.0	23.0	39.0	8 x M20	8 x M16	56.9
150	100	285	205	168.3	212	240	6.0	28.0	50.0	114.3	158	180	3.0	23.0	43.0	8 x M20	8 x M16	63.7
150	125	285	245	168.3	212	240	6.0	28.0	50.0	139.7	188	210	4.0	26.0	44.0	8 x M20	8 x M16	74.4
150	150	285	285	168.3	212	240	6.0	28.0	50.0	168.3	212	240	4.5	26.5	48.5	8 x M20	8 x M20	90.9
200	100	365	205	219.1	268	295	6.0	30.0	50.0	114.3	158	180	3.0	23.0	43.0	8 x M20	8 x M16	85.6
200	125	365	245	219.1	268	295	6.0	30.0	50.0	139.7	188	210	4.0	26.0	44.0	8 x M20	8 x M16	96.4
200	150	365	285	219.1	268	295	6.0	30.0	50.0	168.3	212	240	4.5	26.5	48.5	8 x M20	8 x M20	112.9
200	200	365	365	219.1	268	295	6.0	30.0	50.0	219.1	268	295	5.0	29.0	49.0	8 x M20	8 x M20	143.5
250	125	450	245	273.0	320	350	7.5	33.5	55.5	139.7	188	210	4.0	26.0	44.0	12 x M20	8 x M16	119.7
250	150	450	285	273.0	320	350	7.5	33.5	55.5	168.3	212	240	4.5	26.5	48.5	12 x M20	8 x M20	136.3
250	200	450	365	273.0	320	350	7.5	33.5	55.5	219.1	268	295	5.0	29.0	49.0	12 x M20	8 x M20	166.9
250	250	450	450	273.0	320	350	7.5	33.5	55.5	273.0	320	350	5.0	31.0	53.0	12 x M20	12 x M20	202.1
300	150	525	285	323.9	370	400	7.5	33.5	55.5	168.3	212	240	4.5	26.5	48.5	12 x M20	8 x M20	163.9
300	200	525	365	323.9	370	400	7.5	33.5	55.5	219.1	268	295	5.0	29.0	49.0	12 x M20	8 x M20	194.5
300	250	525	450	323.9	370	400	7.5	33.5	55.5	273.0	320	350	5.0	31.0	53.0	12 x M20	12 x M20	229.7
300	300	525	525	323.9	370	400	7.5	33.5	55.5	323.9	370	400	5.0	31.0	53.0	12 x M20	12 x M20	264.8
350	200	600	365	355.6	430	460	8.0	34.0	60.0	219.1	268	295	5.0	29.0	49.0	16 x M20	8 x M20	231.5
350	250	600	450	355.6	430	460	8.0	34.0	60.0	273.0	320	350	5.0	31.0	53.0	16 x M20	12 x M20	266.7
350	300	600	525	355.6	430	460	8.0	34.0	60.0	323.9	370	400	5.0	31.0	53.0	16 x M20	12 x M20	301.8
350	350	600	600	355.6	430	460	8.0	34.0	60.0	355.6	430	460	5.0	31.0	57.0	16 x M20	16 x M20	367.8

continued on the next page

Flanged Crosses (PN 10)

DN ₁	DN ₂	L ₁ (mm)	L ₂ (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₍₁₎ (mm)	s _{min (1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₍₂₎ (mm)	s _{min (2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
400	250	680	450	406.4	482	515	7.0	33.0	63.0	273.0	320	350	5.0	31.0	53.0	16 x M24	12 x M20	313.6
400	300	680	525	406.4	482	515	7.0	33.0	63.0	323.9	370	400	5.0	31.0	53.0	16 x M24	12 x M20	348.6
400	350	680	600	406.4	482	515	7.0	33.0	63.0	355.6	430	460	5.0	31.0	57.0	16 x M24	16 x M20	414.7
400	400	680	680	406.4	482	515	7.0	33.0	63.0	406.4	482	515	5.0	31.0	61.0	16 x M24	16 x M24	495.4
450	300	680	525	457.0	532	565	8.0	36.0	68.0	323.9	370	400	5.0	31.0	53.0	20 x M24	12 x M20	363.7
450	350	680	600	457.0	532	565	8.0	36.0	68.0	355.6	430	460	5.0	31.0	57.0	20 x M24	16 x M20	429.7
450	400	680	680	457.0	532	565	8.0	36.0	68.0	406.4	482	515	5.0	31.0	61.0	20 x M24	16 x M24	510.5
450	450	680	680	457.0	532	565	8.0	36.0	68.0	457.0	532	565	5.0	33.0	65.0	20 x M24	20 x M24	553.3
500	300	830	525	508.0	585	620	8.0	36.0	72.0	323.9	370	400	5.0	31.0	53.0	20 x M24	12x M20	424.0
500	350	830	600	508.0	585	620	8.0	36.0	72.0	355.6	430	460	5.0	31.0	57.0	20 x M24	16 x M20	490.0
500	400	830	680	508.0	585	620	8.0	36.0	72.0	406.4	482	515	5.0	31.0	61.0	20 x M24	16 x M24	570.7
500	450	830	680	508.0	585	620	8.0	36.0	72.0	457.0	532	565	5.0	33.0	65.0	20 x M24	20 x M24	613.6
500	500	830	830	508.0	585	620	8.0	36.0	72.0	508.0	585	620	5.0	33.0	69.0	20 x M24	20 x M24	700.3

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length
 d₁ = Outer diameter of the pipe
 d₄ = Raised face diameter
 K = Bolt circle diameter
 s_{min} = Minimum flare thickness
 a₁ = Minimum length with fixed flange (Type 11) and s_{min}
 a₂ = Minimum length with loose flange (Types 04/34) and s_{min}
 Technical data valid for the pressure level PN 10.
 a₁ and a₂ depend on construction type and lining thickness.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●				
		●			
40	●				
		●			
50	●				
		●			
80	●				
		●			
100	●				
		●			
150	●				
		●			
200	●				
		●			
250	●				
		●			
300	●				
		●			

Vacuum resistance:

 = full vacuum
 = limited vacuum
 = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.



Instrument Tees



Instrument Tees (PN 10)

Instrument Tees, also known as gauge connections, are the one-piece solution with PFA or PP lining for the connection to your measuring devices. In case of narrow space, also useable as short tee.



Instrument Tees (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PFA (virgin or conductive)
- PP

Other pressure levels:

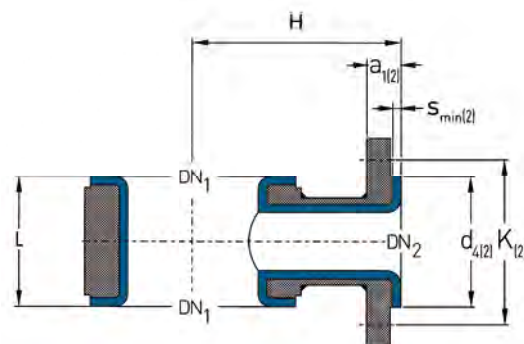
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extension

Optional extras:

- final painting



DN ₁	DN ₂	L (mm)	H (mm)	d ₄₍₂₎ (mm)	K ₍₂₎ (mm)	S _{min (2)} (mm)	a ₁₍₂₎ (mm)	No. of bolts x thread DN ₂	Weights (ca. kg/piece)
25	15	50	90	45	65	4.0	20.0	4 x M12	2.0
25	20	50	90	58	75	4.0	22.0	4 x M12	2.4
25	25	50	90	68	85	4.0	22.0	4 x M12	2.6
32	15	50	100	45	65	4.0	20.0	4 x M12	2.3
32	20	50	100	58	75	4.0	22.0	4 x M12	2.8
32	25	50	100	68	85	4.0	22.0	4 x M12	3.0
40	15	50	110	45	65	4.0	20.0	4 x M12	2.7
40	20	50	110	58	75	4.0	22.0	4 x M12	3.1
40	25	50	110	68	85	4.0	22.0	4 x M12	3.3
40	40	75	110	88	110	4.0	22.0	4 x M16	5.4
50	15	50	115	45	65	4.0	20.0	4 x M12	3.2
50	20	50	115	58	75	4.0	22.0	4 x M12	3.7
50	25	50	115	68	85	4.0	22.0	4 x M12	3.9
50	40	75	115	88	110	4.0	22.0	4 x M16	6.3
50	50	90	115	102	125	4.0	22.0	4 x M16	7.6
65	15	50	125	45	65	4.0	20.0	4 x M12	4.0
65	20	50	125	58	75	4.0	22.0	4 x M12	4.4
65	25	50	125	68	85	4.0	22.0	4 x M12	4.6
65	40	75	125	88	110	4.0	22.0	4 x M16	8.3
65	50	90	125	102	125	4.0	22.0	4 x M16	9.1
80	15	50	135	45	65	4.0	20.0	4 x M12	4.5
80	20	50	135	58	75	4.0	22.0	4 x M12	5.0
80	25	50	135	68	85	4.0	22.0	4 x M12	5.2
80	40	75	135	88	110	4.0	22.0	4 x M16	8.3
80	50	90	135	102	125	4.0	22.0	4 x M16	11.2
100	15	50	150	45	65	4.0	20.0	4 x M12	5.0
100	20	50	150	58	75	4.0	22.0	4 x M12	5.4
100	25	50	150	68	85	4.0	22.0	4 x M12	5.7
100	40	75	150	88	110	4.0	22.0	4 x M16	9.1
100	50	90	150	102	125	4.0	22.0	4 x M16	12.2
125	15	50	160	45	65	4.0	20.0	4 x M12	6.2
125	20	50	160	58	75	4.0	22.0	4 x M12	6.7
125	25	50	160	68	85	4.0	22.0	4 x M12	6.9
125	40	75	160	88	110	4.0	22.0	4 x M16	11.0
125	50	90	160	102	125	4.0	22.0	4 x M16	13.3

continued on the next page

Instrument Tees (PN 10)

DN ₁	DN ₂	L (mm)	H (mm)	d ₄₍₂₎ (mm)	K ₍₂₎ (mm)	s _{min(2)} (mm)	a ₁₍₂₎ (mm)	No. of bolts x thread DN ₂	Gewichte (ca. kg/St.)
150	15	50	180	45	65	4.0	20.0	4 x M12	6.9
150	20	50	180	58	75	4.0	22.0	4 x M12	7.4
150	25	50	180	68	85	4.0	22.0	4 x M12	7.6
150	40	75	180	88	110	4.0	22.0	4 x M16	12.1
150	50	90	180	102	125	4.0	22.0	4 x M16	14.7
200	15	50	210	45	65	4.0	20.0	4 x M12	9.5
200	20	50	210	58	75	4.0	22.0	4 x M12	9.9
200	25	50	210	68	85	4.0	22.0	4 x M12	10.1
200	40	75	210	88	110	4.0	22.0	4 x M16	16.1
200	50	90	210	102	125	4.0	22.0	4 x M16	19.6
250	25	50	240	68	85	4.0	22.0	4 x M12	13.7
250	40	75	240	88	110	4.0	22.0	4 x M16	21.7
250	50	90	240	102	125	4.0	22.0	4 x M16	26.4
300	25	90	340	68	85	4.0	22.0	4 x M12	27.5
300	40	110	340	88	110	4.0	22.0	4 x M16	34.8
300	50	120	340	102	125	4.0	22.0	4 x M16	38.5
350	25	90	375	68	85	4.0	22.0	4 x M12	43.2
350	40	110	375	88	110	4.0	22.0	4 x M16	54.2
350	50	120	375	102	125	4.0	22.0	4 x M16	59.7
400	25	90	390	68	85	4.0	22.0	4 x M12	48.3
400	40	110	390	88	110	4.0	22.0	4 x M16	60.5
400	50	120	390	102	125	4.0	22.0	4 x M16	66.6
450	25	90	425	68	85	4.0	22.0	4 x M12	51.1
450	40	110	425	88	110	4.0	22.0	4 x M16	64.0
450	50	120	425	102	125	4.0	22.0	4 x M16	70.6
500	25	90	450	68	85	4.0	22.0	4 x M12	66.5
500	40	110	450	88	110	4.0	22.0	4 x M16	83.1
500	50	120	450	102	125	4.0	22.0	4 x M16	91.5

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25					
					
40					
					
50					
					
80					
					
100					
					
150					
					
200					
					
250					
					
300					
					

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length
H = Overall height
d₄ = Raised face diameter
K = Bolt circle diameter
s_{min} = Minimum flare thickness
a₁ = Minimum length with fixed flange (Type 11)
and s_{min}

Technical data valid for the pressure level PN 10.

a₁ depends on construction type and lining thickness.

Vacuum resistance:

 = full vacuum
 = limited vacuum
 = no vacuum

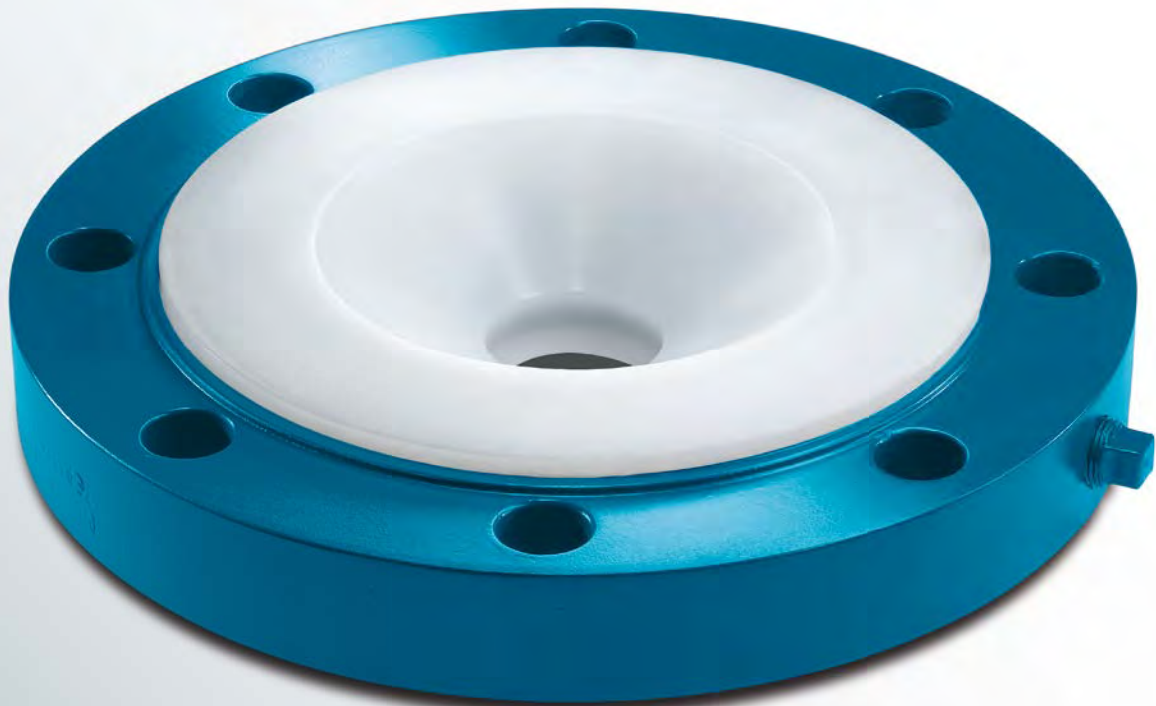
Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Reducers



Reducing Flanges (PN 10)

We have a custom-made solution for transitions between all nominal pipe sizes. Depending on the reduction, lined with PTFE, PFA or PP.



Reducing Flanges (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PFA (virgin or conductive)
- PP

Other pressure levels:

- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug

Optional extras:

- final painting

Form K1 (concentric):

- DN₁: through holes
- DN₂: threaded holes

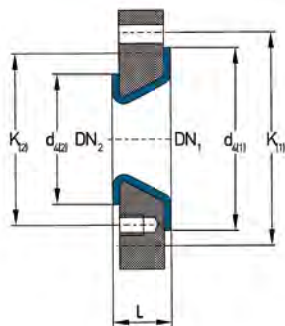
Form K2 (concentric):

- DN₁: threaded holes
- DN₂: threaded holes

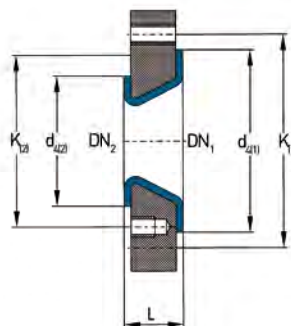
Form K3 (concentric):

- DN₁: threaded holes
- DN₂: threaded holes on centre line

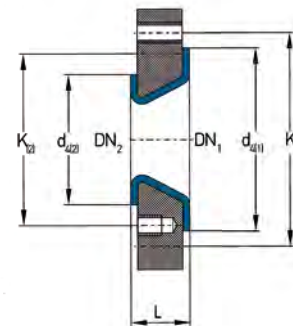
Excentric **Reducing Flanges** – Form E2 and E3 according to DIN 2848 – on request.



Form K1



Form K2



Form K3

DN ₁	DN ₂	L (mm)	Form	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	Lining materials	No. of bolts x thread		Weights (ca. kg/piece)
									DN ₁	DN ₂	
20	15	35	K3	58	75	45	65	PTFE	4 x M12	4 x M12	2.1
25	15	35	K3	68	85	45	65	PTFE	4 x M12	4 x M12	2.4
25	20	35	K3	68	85	58	75	PTFE	4 x M12	4 x M12	2.4
32	20	35	K3	78	100	58	75	PTFE	4 x M16	4 x M12	3.6
32	25	35	K3	78	100	68	85	PTFE	4 x M16	4 x M12	3.7
40	20	35	K2	88	110	58	75	PFA	4 x M16	4 x M12	3.9
40	25	35	K3	88	110	68	85	PTFE	4 x M16	4 x M12	4.2
40	32	35	K3	88	110	78	100	PTFE	4 x M16	4 x M16	4.1
50	20	35	K2	102	125	58	75	PFA	4 x M16	4 x M12	4.7
50	25	35	K2	102	125	68	85	PFA	4 x M16	4 x M12	4.7
50	32	35	K3	102	125	78	100	PTFE	4 x M16	4 x M16	5.0
50	40	35	K3	102	125	88	110	PTFE	4 x M16	4 x M16	5.0
65	20	35	K2	122	145	58	75	PFA	8 x M16	4 x M12	6.0
65	25	35	K2	122	145	68	85	PFA	8 x M16	4 x M12	5.9
65	32	35	K2	122	145	78	100	PFA	8 x M16	4 x M16	5.8
65	40	35	K3	122	145	88	110	PTFE	8 x M16	4 x M16	6.2
65	50	35	K3	122	145	102	125	PTFE	8 x M16	4 x M16	6.2
80	25	35	K1	138	160	68	85	PFA	8 x M16	4 x M12	6.8
80	32	35	K2	138	160	78	100	PFA	8 x M16	4 x M16	6.8
80	40	35	K2	138	160	88	110	PFA	8 x M16	4 x M16	6.7
80	50	35	K2	138	160	102	125	PTFE	8 x M16	4 x M16	7.2
80	65	35	K2	138	160	122	145	PTFE	8 x M16	8 x M16	7.0

continued on the next page

Reducing Flanges (PN 10)

DN ₁	DN ₂	L (mm)	Form	d ₄₍₁₎ (mm)	K ₍₁₎ (mm)	d ₄₍₂₎ (mm)	K ₍₂₎ (mm)	Lining materials	No. of bolts x thread		Weights (ca. kg/piece)
									DN ₁	DN ₂	
100	25	45	K1	158	180	68	85	PFA	8 x M16	4 x M12	10.9
100	32	45	K1	158	180	78	100	PFA	8 x M16	4 x M16	11.0
100	40	45	K1	158	180	88	110	PFA	8 x M16	4 x M16	10.9
100	50	45	K2	158	180	102	125	PFA	8 x M16	4 x M16	10.8
100	65	45	K2	158	180	122	145	PTFE	8 x M16	8 x M16	11.2
100	80	45	K3	158	180	138	160	PTFE	8 x M16	8 x M16	11.0
125	25	45	K1	188	210	68	85	PFA	8 x M16	4 x M12	14.8
125	32	45	K1	188	210	78	100	PFA	8 x M16	4 x M16	14.3
125	40	45	K1	188	210	88	110	PFA	8 x M16	4 x M16	14.4
125	50	45	K1	188	210	102	125	PFA	8 x M16	4 x M16	13.6
125	65	45	K2	188	210	122	145	PFA	8 x M16	8 x M16	13.7
125	80	45	K2	188	210	138	160	PTFE	8 x M16	8 x M16	13.1
125	100	45	K3	188	210	158	180	PTFE	8 x M16	8 x M16	12.6
150	25	45	K1	212	240	68	85	PFA	8 x M20	4 x M12	18.6
150	32	45	K1	212	240	78	100	PFA	8 x M20	4 x M16	18.9
150	40	45	K1	212	240	88	110	PFA	8 x M20	4 x M16	18.6
150	50	45	K1	212	240	102	125	PFA	8 x M20	4 x M16	18.2
150	65	45	K1	212	240	122	145	PFA	8 x M20	8 x M16	17.9
150	80	45	K1	212	240	138	160	PFA	8 x M20	8 x M16	17.3
150	100	45	K2	212	240	158	180	PTFE	8 x M20	8 x M16	16.7
150	125	45	K3	212	240	188	210	PTFE	8 x M20	8 x M16	16.4
200	50	45	K1	268	295	102	125	PFA	8 x M20	4 x M16	26.2
200	65	45	K1	268	295	122	145	PFA	8 x M20	8 x M16	25.7
200	80	45	K1	268	295	138	160	PFA	8 x M20	8 x M16	24.9
200	100	45	K1	268	295	158	180	PFA	8 x M20	8 x M16	24.4
200	125	45	K1	268	295	188	210	PTFE	8 x M20	8 x M16	22.6
200	150	45	K2	268	295	212	240	PTFE	8 x M20	8 x M20	21.8
250	65	45	K1	320	350	122	145	PFA	12 x M20	8 x M16	37.3
250	80	45	K1	320	350	138	160	PFA	12 x M20	8 x M16	35.5
250	100	45	K1	320	350	158	180	PFA	12 x M20	8 x M16	34.2
250	125	45	K1	320	350	188	210	PTFE	12 x M20	8 x M16	33.0
250	150	45	K1	320	350	212	240	PTFE	12 x M20	8 x M20	30.2
250	200	45	K2	320	350	268	295	PTFE	12 x M20	8 x M20	27.8
300	80	50	K1	370	400	138	160	PTFE	12 x M20	8 x M16	50.9
300	100	50	K1	370	400	158	180	PTFE	12 x M20	8 x M16	49.7
300	125	50	K1	370	400	188	210	PTFE	12 x M20	8 x M16	48.0
300	150	50	K1	370	400	212	240	PTFE	12 x M20	8 x M20	47.1
300	200	50	K1	370	400	268	295	PTFE	12 x M20	8 x M20	38.7
300	250	50	K2	370	400	320	350	PTFE	12 x M20	12 x M20	37.7
350	100	50	K1	430	460	158	180	PTFE	16 x M20	8 x M16	64.9
350	125	50	K1	430	460	188	210	PTFE	16 x M20	8 x M16	63.2
350	150	50	K1	430	460	212	240	PTFE	16 x M20	8 x M20	64.5
350	200	50	K1	430	460	268	295	PTFE	16 x M20	8 x M20	58.5
350	250	50	K1	430	460	320	350	PTFE	16 x M20	12 x M20	50.8
350	300	50	K2	430	460	370	400	PTFE	16 x M20	12 x M20	47.0

continued on the next page

Reducing Flanges (PN 10)

DN ₁	DN ₂	L (mm)	Form	d ₄₍₁₎ (mm)	K ₍₁₎ (mm)	d ₄₍₂₎ (mm)	K ₍₂₎ (mm)	Lining materials	No. of bolts x thread		Weights (ca. kg/piece)
									DN ₁	DN ₂	
400	125	50	K1	482	515	188	210	PTFE	16 x M24	8 x M16	84.6
400	150	50	K1	482	515	212	240	PTFE	16 x M24	8 x M20	82.6
400	200	50	K1	482	515	268	295	PTFE	16 x M24	8 x M20	78.9
400	250	50	K1	482	515	320	350	PTFE	16 x M24	12 x M20	72.1
400	300	50	K1	482	515	370	400	PTFE	16 x M24	12 x M20	56.5
400	350	50	K2	482	515	430	460	PTFE	16 x M24	16 x M20	52.0
450	150	50	K1	532	565	212	240	PTFE	20 x M24	8 x M20	90.1
450	200	50	K1	532	565	268	295	PTFE	20 x M24	8 x M20	87.8
450	250	50	K1	532	565	320	350	PTFE	20 x M24	12 x M20	84.8
450	300	50	K1	532	565	370	400	PTFE	20 x M24	12 x M20	81.8
450	350	50	K1	532	565	430	460	PTFE	20 x M24	16 x M20	76.6
450	400	50	K2	532	565	482	515	PTFE	20 x M24	16 x M24	73.3
500	150	50	K1	585	620	212	240	PTFE	20 x M24	8 x M20	119.9
500	200	50	K1	585	620	268	295	PTFE	20 x M24	8 x M20	114.6
500	250	50	K1	585	620	320	350	PTFE	20 x M24	12 x M20	107.5
500	300	50	K1	585	620	370	400	PTFE	20 x M24	12 x M20	102.2
500	350	50	K1	585	620	430	460	PTFE	20 x M24	16 x M20	91.6
500	400	50	K1	585	620	482	515	PTFE	20 x M24	16 x M24	83.3

Different nominal pipe sizes
and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

Technical data valid for the
pressure level PN 10.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		▬	▬	▬
		●	▬	▬	▬
40	●		▬	▬	▬
		●	▬	▬	▬
50	●		▬	▬	▬
		●	▬	▬	▬
80	●		▬	▬	▬
		●	▬	▬	▬
100	●		▬	▬	▬
		●	▬	▬	▬
150	●		▬	▬	▬
		●	▬	▬	▬
200	●		▬	▬	▬
		●	▬	▬	▬
250	●		▬	▬	▬
		●	▬	▬	▬
300	●		▬	▬	▬
		●	▬	▬	▬

Vacuum resistance:

▬ = full vacuum

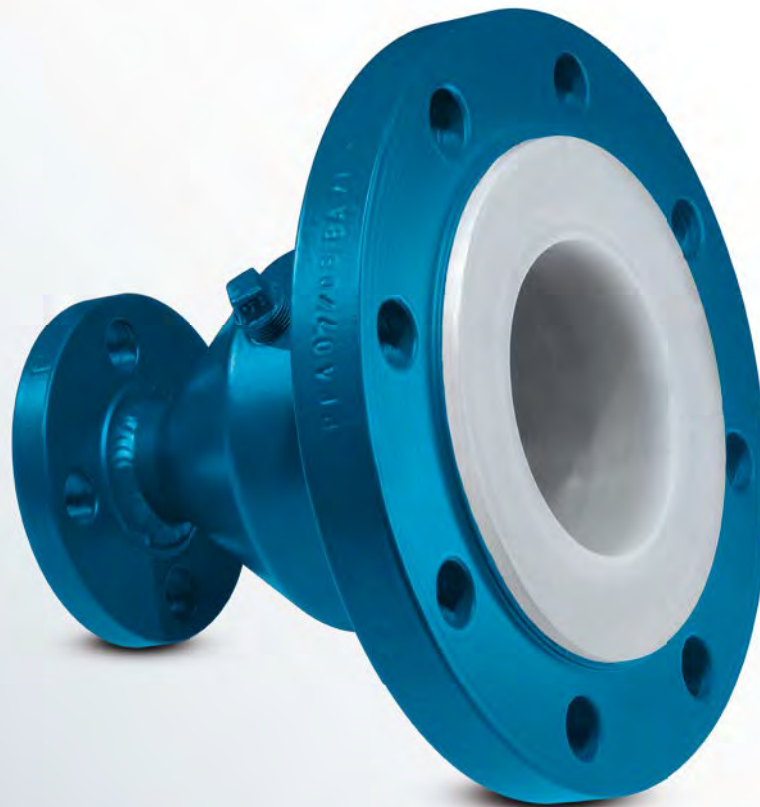
▬ = limited vacuum

▬ = no vacuum

Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

Flanged Reducers concentric (PN 10)

Concentric Flanged Reducers are the universal solution for all changes of the nominal pipe size. Depending on the nominal width, the reducers are lined with PTFE, PFA or PP.



Flanged Reducers concentric (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PFA (virgin or conductive)
- PP

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

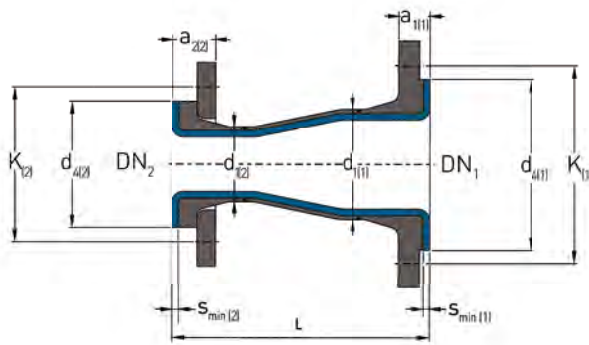
- PN 16
- PN 25
- PN 40

Special features:

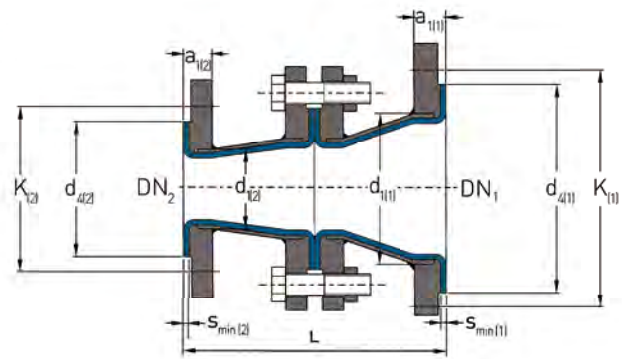
- earthing stud/ lug
- vent hole extension

Optional extras:

- final painting
- non-destructive testing



one-piece



two-piece

DN ₁	DN ₂	L (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min(1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₂₍₂₎ (mm)	s _{min(2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	Lining materials	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
20	15	125	26.9	58	75	3.0	21.0	33.0	26.9	45	65	3.0	19.0	29.0	PTFE	4 x M12	4 x M12	2.1
25	15	125	33.7	68	85	3.0	21.0	33.0	26.9	45	65	3.0	19.0	29.0	PTFE	4 x M12	4 x M12	2.3
25	20	125	33.7	68	85	3.0	21.0	33.0	26.9	58	75	3.0	21.0	33.0	PTFE	4 x M12	4 x M12	2.7
32	20	130	42.4	78	100	3.0	21.0	35.0	26.9	58	75	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	3.4
32	25	130	42.4	78	100	3.0	21.0	35.0	33.7	68	85	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	3.7
40	20	145	48.3	88	110	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	PFA	4 x M16	4 x M12	3.7
40	25	145	48.3	88	110	3.0	21.0	35.0	33.7	68	85	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	4.0
40	32	150	48.3	88	110	3.0	21.0	35.0	42.4	78	100	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	4.9
50	25	160	60.3	102	125	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	PFA	4 x M16	4 x M12	4.6
50	32	165	60.3	102	125	3.0	21.0	39.0	42.4	78	100	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	5.5
50	40	165	60.3	102	125	3.0	21.0	39.0	48.3	88	110	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	5.9
65	32	180	76.1	122	145	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	PFA	8 x M16	4 x M16	6.3
65	40	180	76.1	122	145	3.0	21.0	39.0	48.3	88	110	3.0	21.0	35.0	PTFE	8 x M16	4 x M16	6.7
65	50	185	76.1	122	145	3.0	21.0	39.0	60.3	102	125	3.0	21.0	39.0	PTFE	8 x M16	4 x M16	7.6
80	25	185	88.9	138	160	4.0	24.0	40.0	33.7	68	85	4.0	22.0	34.0	PFA	8 x M16	4 x M12	6.6
80	40	185	88.9	138	160	4.0	24.0	40.0	48.3	88	110	4.0	22.0	36.0	PFA	8 x M16	4 x M16	7.8
80	50	190	88.9	138	160	3.0	23.0	39.0	60.3	102	125	3.0	21.0	39.0	PTFE	8 x M16	4 x M16	8.8
80	65	190	88.9	138	160	3.0	23.0	39.0	76.1	122	145	3.0	21.0	39.0	PTFE	8 x M16	8 x M16	9.7
100	50	200	114.3	158	180	4.0	24.0	44.0	60.3	102	125	4.0	22.0	40.0	PFA	8 x M16	4 x M16	10.0
100	65	200	114.3	158	180	4.5	24.5	44.5	76.1	122	145	4.5	22.5	40.5	PTFE	8 x M16	8 x M16	10.9
100	80	205	114.3	158	180	4.5	24.5	44.5	88.9	138	160	4.5	24.5	40.5	PTFE	8 x M16	8 x M16	11.9
125	65	230	139.7	188	210	4.0	26.0	44.0	76.1	122	145	4.0	22.0	40.0	PFA	8 x M16	8 x M16	14.1
125	80	235	139.7	188	210	4.0	26.0	44.0	88.9	138	160	4.0	24.0	40.0	PFA	8 x M16	8 x M16	15.1
125	100	235	139.7	188	210	4.5	26.5	44.5	114.3	158	180	4.5	24.5	44.5	PTFE	8 x M16	8 x M16	16.5

continued on the next page

Flanged Reducers concentric (PN 10)

DN ₁	DN ₂	L (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min (1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₁₍₂₎ (mm)	s _{min (2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	Lining mate- rials	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
150	80	250	168.3	212	240	4.0	26.0	48.0	88.9	138	160	4.0	24.0	40.0	PFA	8 x M20	8 x M16	18.1
150	100	250	168.3	212	240	6.0	28.0	50.0	114.3	158	180	6.0	26.0	46.0	PTFE	8 x M20	8 x M16	19.5
150	125	250	168.3	212	240	6.0	28.0	50.0	139.7	188	210	6.0	28.0	46.0	PTFE	8 x M20	8 x M16	21.5
200	100	270	219.1	268	295	6.0	30.0	50.0	114.3	158	180	6.0	28.0	46.0	PTFE	8 x M20	8 x M16	43.5
200	125	270	219.1	268	295	6.0	30.0	50.0	139.7	188	210	6.0	28.0	46.0	PTFE	8 x M20	8 x M16	49.7
200	150	270	219.1	268	295	6.0	30.0	50.0	168.3	212	240	6.0	28.0	50.0	PTFE	8 x M20	8 x M20	33.0
250	125	305	273.0	320	350	6.0	32.0	54.0	139.7	188	210	6.0	28.0	46.0	PTFE	12 x M20	8 x M16	59.8
250	150	305	273.0	320	350	6.0	32.0	54.0	168.3	212	240	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	67.5
250	200	310	273.0	320	350	6.0	32.0	54.0	219.1	268	295	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	46.9
300	150	330	323.9	370	400	6.0	32.0	54.0	168.3	212	240	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	78.1
300	200	335	323.9	370	400	6.0	32.0	54.0	219.1	268	295	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	91.6
300	250	340	323.9	370	400	6.0	32.0	54.0	273.0	320	350	6.0	32.0	54.0	PTFE	12 x M20	12 x M20	63.2
350	200	465	355.6	430	460	7.5	37.5	59.5	219.1	268	295	7.5	31.5	51.5	PTFE	16 x M20	8 x M20	116.5
350	250	465	355.6	430	460	7.5	37.5	59.5	273.0	320	350	7.5	33.5	55.5	PTFE	16 x M20	12 x M20	129.8
350	300	465	355.6	430	460	7.5	33.5	59.5	323.9	370	400	7.5	33.5	55.5	PTFE	16 x M20	12 x M20	94.9
400	250	495	406.4	482	515	7.5	39.5	63.5	273.0	320	350	7.5	33.5	55.5	PTFE	16 x M24	12 x M20	143.6
400	300	495	406.4	482	515	7.5	39.5	63.5	323.9	370	400	7.5	33.5	55.5	PTFE	16 x M24	12 x M20	165.7
400	350	495	406.4	482	515	7.5	33.5	63.5	355.6	430	460	7.5	33.5	59.5	PTFE	16 x M24	16 x M20	120.9
450	250	495	457.0	532	565	8.0	44.0	68.0	273.0	320	350	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	151.4
450	300	495	457.0	532	565	8.0	44.0	68.0	323.9	370	400	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	173.4
450	350	495	457.0	532	565	8.0	36.0	68.0	355.6	430	460	8.0	34.0	60.0	PTFE	20 x M24	16 x M20	128.4
500	300	650	508.0	585	620	8.0	46.0	72.0	323.9	370	400	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	211.7
500	350	650	508.0	585	620	8.0	46.0	72.0	355.6	430	460	8.0	38.0	60.0	PTFE	20 x M24	16 x M20	241.1
500	400	650	508.0	585	620	8.0	36.0	72.0	406.4	482	515	8.0	34.0	64.0	PTFE	20 x M24	16 x M24	181.9

The nominal pipe size combinations printed in **bold** are manufactured in **two parts** with flanges fix-fix or fix-loose in which the loose flange is generally on the DN₁ side.

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length
d₁ = Outer diameter of the pipe
d₄ = Raised face diameter
K = Bolt circle diameter
s_{min} = Minimum flare thickness
a₁ = Minimum length with fixed flange and s_{min}
(one-piece: Type 11, two-piece: Type 011)
a₂ = Minimum length with loose flange and s_{min}
(one-piece: Types 04/34, two-piece: Types 02/32)
Technical data valid for the pressure level PN 10.
a₁ and a₂ depend on construction type and lining thickness.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23 °C	150 °C	200 °C
25	●				
		●			
40	●				
		●			
50	●				
		●			
80	●				
		●			
100	●				
		●			
150	●				
		●			
200	●				
		●			
250	●				
		●			
300	●				
		●			

Vacuum resistance:

 = full vacuum
 = limited vacuum
 = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Flanged Reducers excentric (PN 10)

In case of horizontal installation, excentric Flanged Reducers enable the complete draining of pipe sections. Depending on the nominal width, the reducers are lined with PTFE, PFA or PP.



Flanged Reducers excentric (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PFA (virgin or conductive)
- PP

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

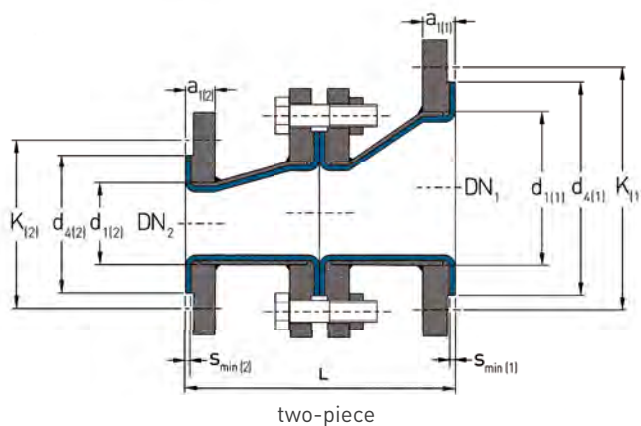
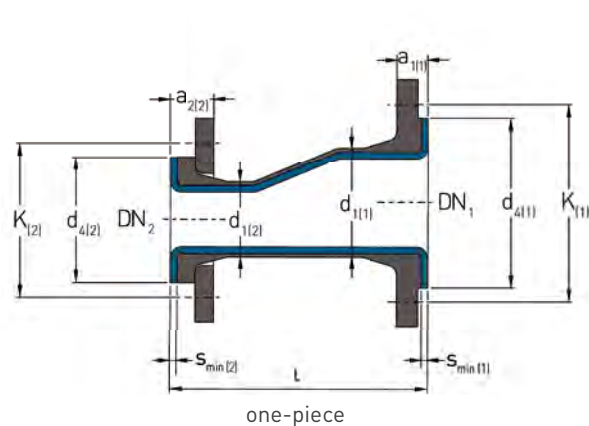
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/ lug
- vent hole extension

Optional extras:

- final painting
- non-destructive testing



DN ₁	DN ₂	L (mm)	d ₁₍₁₎ (mm)	d ₄₍₁₎ (mm)	K ₁₍₁₎ (mm)	s _{min(1)} (mm)	a ₁₍₁₎ (mm)	a ₂₍₁₎ (mm)	d ₁₍₂₎ (mm)	d ₄₍₂₎ (mm)	K ₂₍₁₎ (mm)	s _{min(2)} (mm)	a ₁₍₂₎ (mm)	a ₂₍₂₎ (mm)	Lining mate- rials	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
20	15	125	26.9	58	75	3.0	21.0	33.0	26.9	45	65	3.0	19.0	29.0	PTFE	4 x M12	4 x M12	2.1
25	15	125	33.7	68	85	3.0	21.0	33.0	26.9	45	65	3.0	19.0	29.0	PTFE	4 x M12	4 x M12	2.4
25	20	125	33.7	68	85	3.0	21.0	33.0	26.9	58	75	3.0	21.0	33.0	PTFE	4 x M12	4 x M12	2.8
32	20	130	42.4	78	100	3.0	21.0	35.0	26.9	58	75	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	3.4
32	25	130	42.4	78	100	3.0	21.0	35.0	33.7	68	85	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	3.7
40	20	145	48.3	88	110	4.0	22.0	36.0	26.9	58	75	4.0	22.0	34.0	PFA	4 x M16	4 x M12	3.8
40	25	145	48.3	88	110	3.0	21.0	35.0	33.7	68	85	3.0	21.0	33.0	PTFE	4 x M16	4 x M12	4.1
40	32	150	48.3	88	110	3.0	21.0	35.0	42.4	78	100	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	5.0
50	25	160	60.3	102	125	4.0	22.0	40.0	33.7	68	85	4.0	22.0	34.0	PFA	4 x M16	4 x M12	4.7
50	32	165	60.3	102	125	3.0	21.0	39.0	42.4	78	100	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	5.6
50	40	165	60.3	102	125	3.0	21.0	39.0	48.3	88	110	3.0	21.0	35.0	PTFE	4 x M16	4 x M16	6.0
65	32	180	76.1	122	145	4.0	22.0	40.0	42.4	78	100	4.0	22.0	36.0	PFA	8 x M16	4 x M16	6.4
65	40	180	76.1	122	145	3.0	21.0	39.0	48.3	88	110	3.0	21.0	35.0	PTFE	8 x M16	4 x M16	6.8
65	50	185	76.1	122	145	3.0	21.0	39.0	60.3	102	125	3.0	21.0	39.0	PTFE	8 x M16	4 x M16	7.8
80	25	185	88.9	138	160	4.0	24.0	40.0	33.7	68	85	4.0	22.0	34.0	PFA	8 x M16	4 x M12	6.7
80	40	185	88.9	138	160	4.0	24.0	40.0	48.3	88	110	4.0	22.0	36.0	PFA	8 x M16	4 x M16	8.0
80	50	190	88.9	138	160	3.0	23.0	39.0	60.3	102	125	3.0	21.0	39.0	PTFE	8 x M16	4 x M16	8.9
80	65	190	88.9	138	160	3.0	23.0	39.0	76.1	122	145	3.0	21.0	39.0	PTFE	8 x M16	8 x M16	9.9
100	50	200	114.3	158	180	4.0	24.0	44.0	60.3	102	125	4.0	22.0	40.0	PFA	8 x M16	4 x M16	10.3
100	65	200	114.3	158	180	4.5	24.5	44.5	76.1	122	145	4.5	22.5	40.5	PTFE	8 x M16	8 x M16	11.2
100	80	205	114.3	158	180	4.5	24.5	44.5	88.9	138	160	4.5	24.5	40.5	PTFE	8 x M16	8 x M16	12.2
125	65	230	139.7	188	210	4.0	26.0	44.0	76.1	122	145	4.0	22.0	40.0	PFA	8 x M16	8 x M16	14.4
125	80	235	139.7	188	210	4.0	26.0	44.0	88.9	138	160	4.0	24.0	40.0	PFA	8 x M16	8 x M16	15.5
125	100	235	139.7	188	210	4.5	26.5	44.5	114.3	158	180	4.5	24.5	44.5	PTFE	8 x M16	8 x M16	16.9

continued on the next page

Flanged Reducers excentric (PN 10)

DN ₁	DN ₂	L	d ₁₍₁₎	d ₄₍₁₎	K ₍₁₎	s _{min (1)}	a ₁₍₁₎	a ₂₍₁₎	d ₁₍₂₎	d ₄₍₂₎	K ₍₂₎	s _{min (2)}	a ₁₍₂₎	a ₂₍₂₎	Lining materials	No. of bolts x thread		Wt. (ca. kg/pc.)
																DN ₁	DN ₂	
150	80	250	168.3	212	240	4.0	26.0	48.0	88.9	138	160	4.0	24.0	40.0	PFA	8 x M20	8 x M16	18.7
150	100	250	168.3	212	240	6.0	28.0	50.0	114.3	158	180	6.0	26.0	46.0	PTFE	8 x M20	8 x M16	20.1
150	125	250	168.3	212	240	6.0	28.0	50.0	139.7	188	210	6.0	28.0	46.0	PTFE	8 x M20	8 x M16	22.2
200	100	270	219.1	268	295	6.0	30.0	50.0	114.3	158	180	6.0	28.0	46.0	PTFE	8 x M20	8 x	45.0
200	125	270	219.1	268	295	6.0	30.0	50.0	139.7	188	210	6.0	28.0	46.0	PTFE	8 x M20	8 x M16	52.2
200	150	270	219.1	268	295	6.0	30.0	50.0	168.3	212	240	6.0	28.0	50.0	PTFE	8 x M20	8 x M20	34.3
250	125	305	273.0	320	350	6.0	32.0	54.0	139.7	188	210	6.0	28.0	46.0	PTFE	12 x M20	8 x M16	62.0
250	150	305	273.0	320	350	6.0	32.0	54.0	168.3	212	240	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	69.9
250	200	310	273.0	320	350	6.0	32.0	54.0	219.1	268	295	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	48.9
300	150	330	323.9	370	400	6.0	32.0	54.0	168.3	212	240	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	81.4
300	200	335	323.9	370	400	6.0	32.0	54.0	219.1	268	295	6.0	30.0	50.0	PTFE	12 x M20	8 x M20	95.4
300	250	340	323.9	370	400	6.0	32.0	54.0	273.0	320	350	6.0	32.0	54.0	PTFE	12 x M20	12 x M20	66.2
350	200	465	355.6	430	460	7.5	37.5	59.5	219.1	268	295	7.5	31.5	51.5	PTFE	16 x M20	8 x M20	122.1
350	250	465	355.6	430	460	7.5	37.5	59.5	273.0	320	350	7.5	33.5	55.5	PTFE	16 x M20	12 x M20	135.0
350	300	465	355.6	430	460	7.5	33.5	59.5	323.9	370	400	7.5	33.5	55.5	PTFE	16 x M20	12 x M20	100.7
400	250	495	406.4	482	515	7.5	39.5	63.5	273.0	320	350	7.5	33.5	55.5	PTFE	16 x M24	12 x M20	150.7
400	300	495	406.4	482	515	7.5	39.5	63.5	323.9	370	400	7.5	33.5	55.5	PTFE	16 x M24	12 x M20	173.3
400	350	495	406.4	482	515	7.5	33.5	63.5	355.6	430	460	7.5	33.5	59.5	PTFE	16 x M24	16 x M20	127.4
450	250	495	457.0	532	565	8.0	44.0	68.0	273.0	320	350	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	159.1
450	300	495	457.0	532	565	8.0	44.0	68.0	323.9	370	400	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	181.7
450	350	495	457.0	532	565	8.0	36.0	68.0	355.6	430	460	8.0	34.0	60.0	PTFE	20 x M24	16 x M20	135.5
500	300	650	508.0	585	620	8.0	46.0	72.0	323.9	370	400	8.0	34.0	56.0	PTFE	20 x M24	12 x M20	223.8
500	350	650	508.0	585	620	8.0	46.0	72.0	355.6	430	460	8.0	38.0	60.0	PTFE	20 x M24	16 x M20	253.6
500	400	650	508.0	585	620	8.0	36.0	72.0	406.4	482	515	8.0	34.0	64.0	PTFE	20 x M24	16 x M24	193.4

The nominal pipe size combinations printed in **bold** are manufactured in **two parts** with flanges fix-fix or fix-loose in which the loose flange is generally on the DN₁ side.

DN ₁	Lining thickness		Possible vacuum		
	standard	thick-walled	23 °C	150 °C	200 °C
25	●				
		●			
40	●				
		●			
50	●				
		●			
80	●				
		●			
100	●				
		●			
150	●				
		●			
200	●				
		●			
250	●				
		●			
300	●				
		●			

Vacuum resistance:

- = full vacuum
- = limited vacuum
- = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Different nominal pipe sizes, total lengths and other construction types on request.

- L = Total length
 - d₁ = Outer diameter of the pipe
 - d₄ = Raised face diameter
 - K = Bolt circle diameter
 - s_{min} = Minimum flare thickness
 - a₁ = Minimum length with fixed flange and s_{min}
(one-piece: Type 11, two-piece: Type 01)
 - a₂ = Minimum length with loose flange and s_{min}
(one-piece: Types 04/34, two-piece: Types 02/32)
- Technical data valid for the pressure level PN 10.
a₁ and a₂ depend on construction type and lining thickness.



Valves



Ball Check Valves (PN 10)

Ball Check Valves for horizontal or vertical installation reliably prevent the reverse flow of working medium. At the same time, they offer the least possible resistance in the direction of flow.



Ball Check Valves (PN 10)

Materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Other pressure levels:

- PN 16
- PN 25
- PN 40

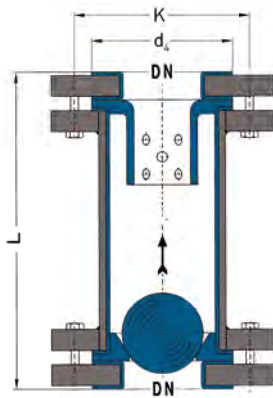
Special features:

- earthing stud/lug
- vent hole extension

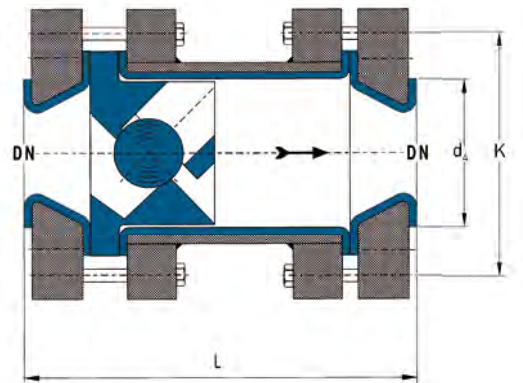
Optional extras:

- final painting
- non-destructive testing

Form A
vertical



Form B
horizontal



DN	L (mm)		d ₄ (mm)	K (mm)	No. of bolts x thread	Weights (ca. kg/piece)	
	Form A	Form B				Form A	Form B
25	160	160	68	85	4 x M12	6.1	22.6
32	180	180	78	100	4 x M16	8.1	29.8
40	200	200	88	110	4 x M16	9.7	35.9
50	230	230	102	125	4 x M16	11.7	43.2
65	290	290	122	145	8 x M16	17.1	63.2
80	310	310	138	160	8 x M16	20.2	74.5
100	350	350	158	180	8 x M16	25.7	94.9
125	325	325	188	210	8 x M16	33.8	125.0
150	350	350	212	240	8 x M20	45.9	169.8
200	400	400	268	295	8 x M20	61.5	227.3

Different nominal pipe sizes
and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

Technical data valid for the
pressure level PN 10.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●	●	☐	☐	☐
40	●	●	☐	☐	☐
50	●	●	☐	☐	☐
80	●	●	☐	☐	☐
100	●	●	☐	☐	☐
150	●	●	☐	☐	☐
200	●	●	☐	☐	☐

Vacuum resistance:

☐ = full vacuum

☐ = limited vacuum

☐ = no vacuum

Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

Bull's Eye Sight Indicators (PN 10)

Our Bull's Eye Sight Indicators – manufactured with high-quality borosilicate glasses – offer you the right view at any time.



Bull's Eye Sight Indicators (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- up to nominal pipe size DN 100: PFA (virgin or conductive)
- from nominal pipe size DN 125: PTFE (virgin or conductive)
- up to nominal pipe size DN 300: PP

Flange according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

- PN 16
- PN 25
- PN 40

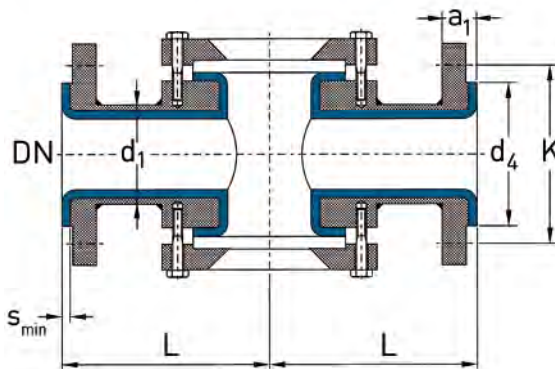
Special features:

- earthing stud/lug
- vent hole extension
- flange stopper

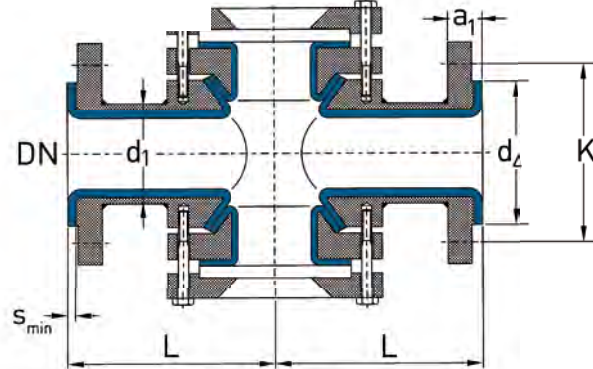
Optional extras:

- final painting
- non-destructive testing

Form A



Form B



DN	L (mm)	Form (mm)	d ₁ (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₁ (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/ pc.)
25	110	A	33.7	68	85	4.0	22.0	34.0	4 x M12	8.5
32	130	A	42.4	78	100	4.0	22.0	36.0	4 x M16	13.7
40	150	A	48.3	88	110	4.0	22.0	36.0	4 x M16	15.6
50	120	A	60.3	102	125	4.0	22.0	40.0	4 x M16	19.8
65	140	A	76.1	122	145	4.0	22.0	40.0	8 x M16	23.8
80	165	A	88.9	138	160	4.0	24.0	40.0	8 x M16	28.0
100	205	A	114.3	158	180	4.0	24.0	44.0	8 x M16	34.4
125	245	B	139.7	188	210	6.0	28.0	46.0	8 x M16	69.7
150	285	B	168.3	212	240	6.0	28.0	50.0	8 x M20	92.9
200	365	B	219.1	268	295	6.0	30.0	50.0	8 x M20	129.5
250	450	B	273.0	320	350	7.5	33.5	55.5	12 x M20	172.2
300	525	B	323.9	370	400	7.5	33.5	55.5	12 x M20	208.4
350	600	B	355.6	430	460	8.0	34.0	60.0	16 x M20	302.3
400	680	B	406.4	482	515	7.0	33.0	63.0	16 x M24	406.9

Different nominal pipe sizes,
total lengths and other
construction types on request.

L = Total length

d₁ = Outer diameter of the
steel pipe

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₁ = Mindestlänge bei
Minimum length with
fixed flange (Type 11)
and s_{min}

a₂ = Minimum length with
loose flange (Types 04/34)
and s_{min}

Technical data valid for the
pressure level PN 10.

a₁ and a₂ depend on construc-
tion type and lining thickness.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●	●	☐	☐	☐
40	●	●	☐	☐	☐
50	●	●	☐	☐	☐
80	●	●	☐	☐	☐
100	●	●	☐	☐	☐

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
150	●	●	☐	☐	☐
200	●	●	☐	☐	☐
250	●	●	☐	☐	☐
300	●	●	☐	☐	☐

Vacuum resistance:

☐ = full vacuum

☐ = limited vacuum

☐ = no vacuum

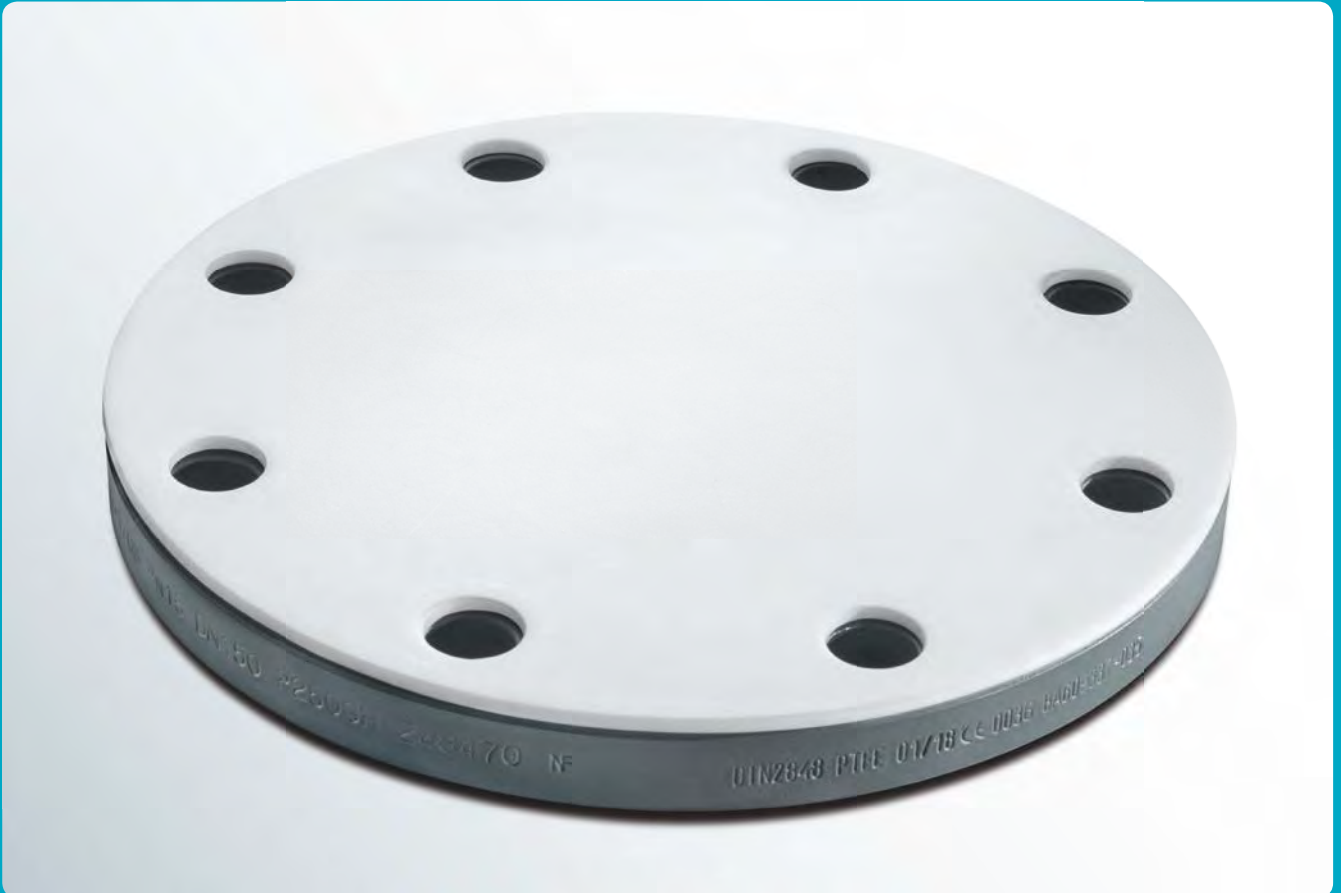
Please refer to the next
higher nominal pipe size
if your nominal pipe size
is not listed.

Blind Flanges



Blind Flanges (PN 10)

Any piping needs cleaning connections and also additional connections. Blind flanges close these connections during regular operation.



Blind Flanges (PN 10)

Materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)
- PP (up to nominal pipe size DN 300)

Flanges according to EN 1092-1.

Other pressure levels:

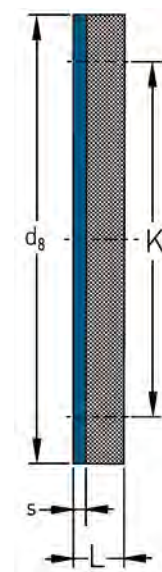
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	d _g (mm)	K (mm)	s (mm)	No. of bolts x thread	Weights (ca. kg/piece)
15	20	95	65	4.0	4 x M12	0.8
20	22	105	75	4.0	4 x M12	1.2
25	22	115	85	4.0	4 x M12	1.4
32	22	140	100	4.0	4 x M16	2.1
40	22	150	110	4.0	4 x M16	2.4
50	22	165	125	4.0	4 x M16	2.9
65	22	185	145	4.0	8 x M16	3.6
80	24	200	160	4.0	8 x M16	4.7
100	25	220	180	5.0	8 x M16	5.8
125	27	250	210	5.0	8 x M16	8.4
150	27	285	240	5.0	8 x M20	10.9
200	29	340	295	5.0	8 x M20	17.1
250	31	395	350	5.0	12 x M20	24.9
300	31	445	400	5.0	12 x M20	32.0
350	31	505	460	5.0	16 x M20	41.2
400	31	565	515	5.0	16 x M24	51.4
450	33	615	565	5.0	20 x M24	65.3
500	33	670	620	5.0	20 x M24	78.0

Different nominal pipe sizes, total lengths and other construction types on request.

L = Total length

d_g = Outer diameter

K = Bolt circle diameter

s = Lining thickness

Technical data valid for the pressure level PN 10.

L depend on construction type and lining thickness.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●		▬	▬	▬
		●	▬	▬	▬
40	●		▬	▬	▬
		●	▬	▬	▬
50	●		▬	▬	▬
		●	▬	▬	▬
80	●		▬	▬	▬
		●	▬	▬	▬
100	●		▬	▬	▬
		●	▬	▬	▬
150	●		▬	▬	▬
		●	▬	▬	▬
200	●		▬	▬	▬
		●	▬	▬	▬
250	●		▬	▬	▬
		●	▬	▬	▬
300	●		▬	▬	▬
		●	▬	▬	▬

Vacuum resistance:

▬ = full vacuum

▬ = limited vacuum

▬ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Expansion Joints



PTFE Expansion Joints, 1 convolute (PN 10)

Our PTFE Expansion Joints are highly flexible and provide compensation of vibrations and heat-induced expansion in your production line. PTFE Expansion Joints with 1 convolute allow high working pressures.



PTFE Expansion Joints, 1 convolute (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

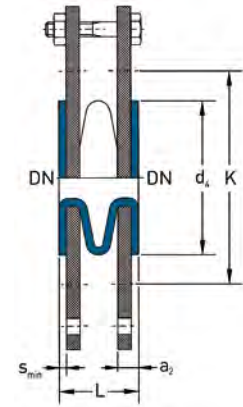
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. [°]	d _k (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
15	40	5	2	2	45	65	3.0	13.0	4 x M12	1.3
20	40	5	2	2	58	75	3.0	13.0	4 x M12	1.6
25	40	5	2	2	68	85	3.0	13.0	4 x M12	1.9
32	40	5	2	2	78	100	3.0	13.0	4 x M16	2.7
40	40	5	2	2	88	110	3.0	13.0	4 x M16	3.1
50	48	6	2	2	102	125	4.0	16.0	4 x M16	4.4
65	54	7	3	3	122	145	4.0	16.0	8 x M16	5.2
80	60	7	3	3	138	160	4.0	16.0	8 x M16	6.2
100	64	7	3	4	158	180	5.0	20.0	8 x M16	8.4
125	70	7	4	4	188	210	4.5	19.5	8 x M16	11.1
150	75	10	4	4	212	240	5.0	23.0	8 x M20	15.9
200	85	10	4	3	268	295	5.0	25.0	8 x M20	25.4
250	93	10	5	3	320	350	7.5	29.5	12 x M20	32.1
300	100	12	5	3	370	400	6.0	31.0	12 x M20	52.8
350	103	12	5	2	430	460	7.5	37.5	16 x M20	72.2
400	103	12	5	2	482	515	7.5	37.5	16 x M24	83.2
500	103	12	5	2	585	620	8.0	38.0	20 x M24	93.7

DN	Overpressure resistance (10 ⁵ Pa) at				Vacuum resistance (10 ⁵ Pa) at			
	23° C	100° C	150° C	200° C	23° C	100° C	150° C	200° C
15	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
20	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
25	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
32	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
40	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
50	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
65	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
80	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
100	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
125	10.0	9.2	6.9	4.8	-1.00	-1.00	-1.00	-0.80
150	10.0	9.2	6.9	4.8	-1.00	-1.00	-1.00	-0.80
200	10.0	7.7	5.8	4.0	-1.00	-1.00	-1.00	-0.70
250	10.0	6.0	4.5	3.2	-1.00	-1.00	-0.80	-0.55
300	10.0	6.0	4.5	3.2	-1.00	-1.00	-0.65	-0.45

Different nominal pipe sizes and total lengths on request.

L = Total length

d_k = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

PTFE Expansion Joints, 2 convolutes (PN 10)

Our PTFE Expansion Joints are highly flexible and provide compensation of vibrations and heat-induced expansion in your production line. The possible absorption of movement is increased by a higher number of convolutes.



PTFE Expansion Joints, 2 convolutes (PN 10)

Flange materials:

- carbon steel
- stainless steel

Lining materials::

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

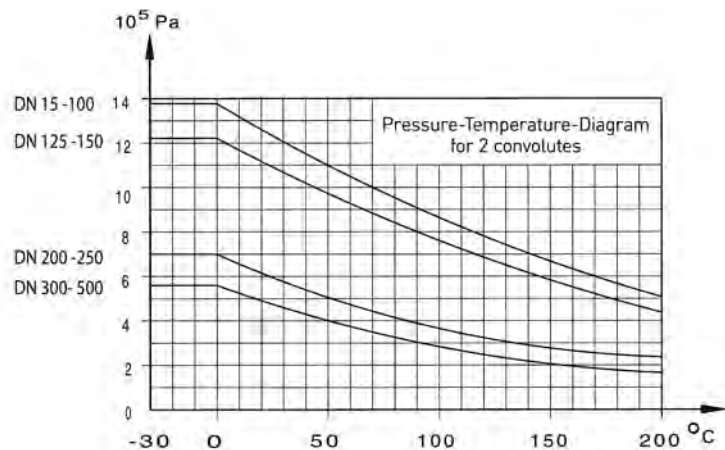
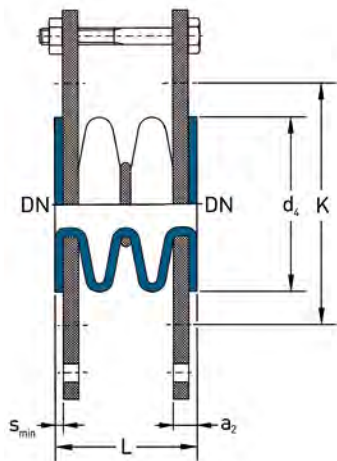
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	Vacuum resistance at				d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/ pc.)
					[10 ⁵ Pa]	max. (°C)	[10 ⁵ Pa]	max. (°C)						
15	35	4	2	7	-1.00	200	-	-	45	65	3.0	11.0	4 x M12	1.1
20	35	4	2	7	-1.00	200	-	-	58	75	3.0	11.0	4 x M12	1.4
25	35	6	3	7	-1.00	200	-	-	68	85	3.0	11.0	4 x M12	1.7
32	35	6	3	7	-1.00	200	-	-	78	100	3.0	13.0	4 x M16	2.8
40	35	6	3	7	-1.00	200	-	-	88	110	3.0	13.0	4 x M16	3.2
50	40	6	3	7	-1.00	200	-	-	102	125	4.0	16.0	4 x M16	4.6
65	57	9	5	7	-1.00	200	-	-	122	145	4.0	16.0	8 x M16	5.5
80	57	9	5	7	-1.00	200	-	-	138	160	4.0	16.0	8 x M16	6.5
100	67	13	6	7	-1.00	200	-	-	158	180	5.0	20.0	8 x M16	8.9
125	83	13	6	7	-1.00	150	-	-	188	210	4.5	19.5	8 x M16	11.3
150	75	13	6	7	-1.00	150	-	-	212	240	5.0	23.0	8 x M20	16.1
200	102	13	6	7	-1.00	50	-0.80	150	268	295	5.0	25.0	8 x M20	26.0
250	140	15	6	7	-0.93	45	-0.66	100	320	350	7.5	29.5	12 x M20	33.5
300	150	20	10	7	-0.85	45	-0.33	100	370	400	6.0	31.0	12 x M20	53.2
350	160	20	10	7	-0.85	45	-0.33	100	430	460	7.5	32.5	16 x M20	69.9
400	178	25	10	7	-0.85	45	-0.33	100	482	515	7.5	32.5	16 x M24	79.9
450	185	25	10	7	-0.66	45	-0.30	100	532	565	8.0	33.0	20 x M24	88.0
500	230	25	10	7	-0.20	45	-0.13	100	585	620	8.0	33.0	20 x M24	93.2

The above shown diagram is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

Different nominal pipe sizes and total lengths on request.

L = Total length
 d₄ = Raised face diameter
 K = Bolt circle diameter
 s_{min} = Minimum flange thickness
 a₂ = Minimum length with loose flange and s_{min}
 Technical data valid for the pressure level PN 10.
 a₂ depends on construction type and lining thickness.

PTFE Expansion Joints, 2 convolutes (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

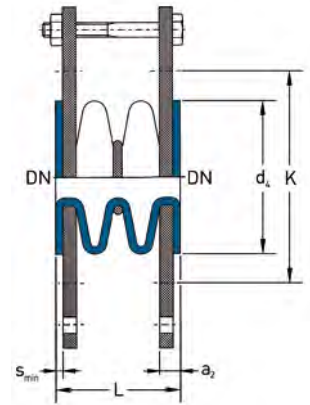
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
15	54	6	3	4	45	65	3.0	13.0	4 x M12	1.3
20	54	6	3	4	58	75	3.0	13.0	4 x M12	1.6
25	54	6	3	4	68	85	3.0	13.0	4 x M12	2.0
32	56	6	3	4	78	100	3.0	13.0	4 x M16	2.7
40	56	6	3	4	88	110	3.0	13.0	4 x M16	3.2
50	68	10	5	5	102	125	4.0	16.0	4 x M16	4.5
65	78	12	5	5	122	145	4.0	16.0	8 x M16	5.4
80	88	15	5	6	138	160	4.0	16.0	8 x M16	6.4
100	88	15	8	6	158	180	5.0	20.0	8 x M16	8.7
125	95	15	8	5	188	210	4.5	19.5	8 x M16	11.7
150	105	15	8	5	212	240	5.0	23.0	8 x M20	16.6
200	110	15	10	5	268	295	5.0	25.0	8 x M20	27.6
250	128	20	10	4	320	350	7.5	29.5	12 x M20	34.7
300	140	20	10	4	370	400	6.0	31.0	12 x M20	58.0
350	145	20	10	4	430	460	7.5	37.5	16 x M20	78.3
400	145	20	12	3	482	515	7.5	37.5	16 x M24	89.3
500	145	30	12	3	585	620	8.0	38.0	20 x M24	100.6

DN	Overpressure resistance (10 ⁵ Pa) at				Vacuum resistance (10 ⁵ Pa) at			
	23° C	100° C	150° C	200° C	23° C	100° C	150° C	200° C
15	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
20	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
25	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
32	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
40	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
50	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
65	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
80	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
100	10.0	10.0	8.3	5.8	-1.00	-1.00	-1.00	-1.00
125	10.0	9.2	6.9	4.8	-1.00	-1.00	-1.00	-0.80
150	10.0	9.2	6.9	4.8	-1.00	-1.00	-1.00	-0.80
200	10.0	7.7	5.8	4.0	-1.00	-1.00	-1.00	-0.70
250	10.0	6.0	4.5	3.2	-1.00	-1.00	-0.80	-0.55
300	10.0	6.0	4.5	3.2	-1.00	-1.00	-0.65	-0.45

Different nominal pipe sizes and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flange thickness

a₂ = Minimum length with loose flange and s_{min}

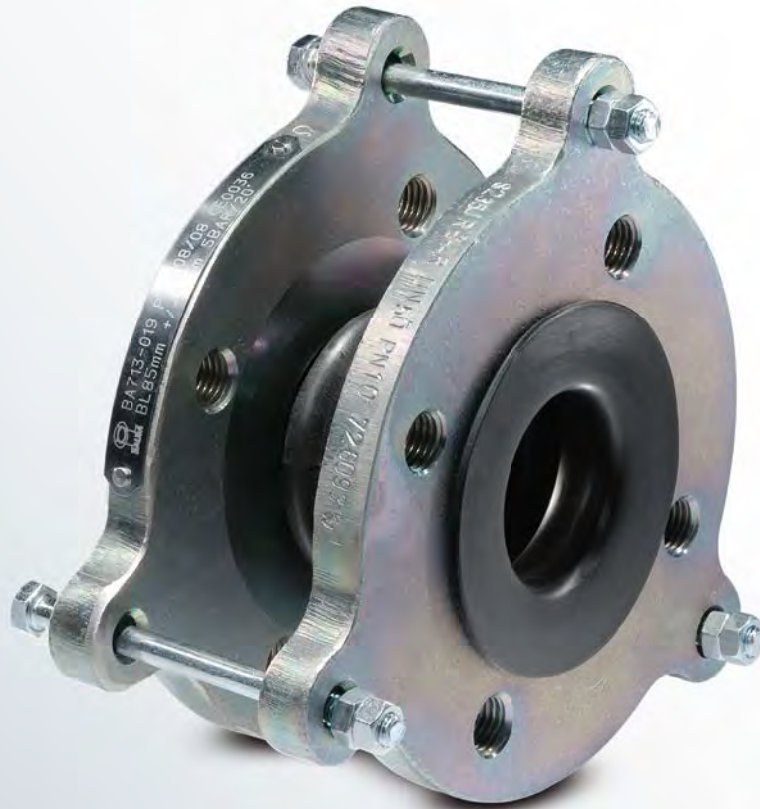
Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

PTFE Expansion Joints, 3 convolutes (PN 10)

Our PTFE Expansion Joints are highly flexible and provide compensation of vibrations and heat-induced expansion in your production line. PTFE Expansion Joints with 3 convolutes are the standard solution for most of the applications.



PTFE Expansion Joints, 3 convolutes (PN 10)

Flange materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

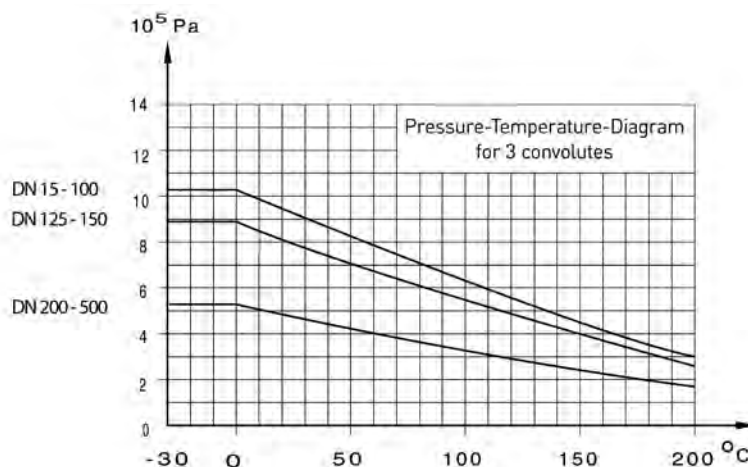
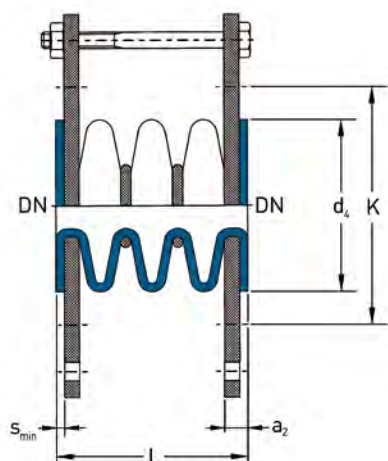
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	Vacuum resistance at				d _k (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/ pc.)
					{10 ⁵ Pa}	max. (°C)	{10 ⁵ Pa}	max. (°C)						
15	46	6	4	14	-1.00	200	-	-	45	65	3.0	11.0	4 x M12	1.1
20	46	6	4	14	-1.00	200	-	-	58	75	3.0	11.0	4 x M12	1.4
25	46	13	6	14	-1.00	200	-	-	68	85	3.0	11.0	4 x M12	1.7
32	46	13	6	14	-1.00	200	-	-	78	100	3.0	13.0	4 x M16	2.8
40	46	13	6	14	-1.00	200	-	-	88	110	3.0	13.0	4 x M16	3.3
50	56	15	9	14	-1.00	200	-	-	102	125	4.0	16.0	4 x M16	4.6
65	77	19	9	14	-1.00	200	-	-	122	145	4.0	16.0	8 x M16	5.5
80	77	25	13	14	-1.00	200	-	-	138	160	4.0	16.0	8 x M16	6.6
100	91	25	13	14	-1.00	200	-	-	158	180	5.0	20.0	8 x M16	9.0
125	111	25	14	14	-1.00	150	-	-	188	210	4.5	19.5	8 x M16	11.5
150	101	28	14	14	-1.00	150	-	-	212	240	5.0	23.0	8 x M20	16.4
200	137	28	14	14	-1.00	50	-0.80	150	268	295	5.0	25.0	8 x M20	26.7
250	200	30	14	14	-0.93	45	-0.66	100	320	350	7.5	29.5	12 x M20	34.9
300	196	30	15	14	-0.85	45	-0.33	100	370	400	6.0	31.0	12 x M20	54.1
350	215	32	18	14	-0.85	45	-0.33	100	430	460	7.5	32.5	16 x M20	71.6
400	233	35	20	14	-0.85	45	-0.33	100	482	515	7.5	32.5	16 x M24	81.7
450	280	30	20	14	-0.66	45	-0.30	100	532	565	8.0	33.0	20 x M24	91.9
500	327	30	25	14	-	-	-0.13	100	585	620	8.0	33.0	20 x M24	98.0

The above shown diagram is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

Different nominal pipe sizes
and total lengths on request.

L = Total length

d_k = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

PTFE Expansion Joints, 3 convolutes (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

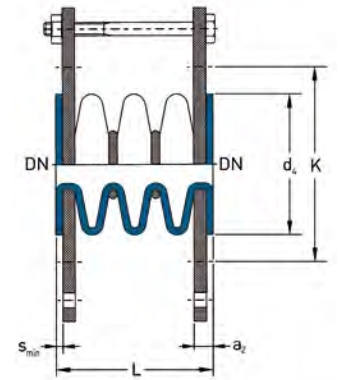
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
15	70	10	6	6	45	65	3.0	13.0	4 x M12	1.4
20	70	10	6	6	58	75	3.0	13.0	4 x M12	1.7
25	70	10	6	6	68	85	3.0	13.0	4 x M12	2.0
32	75	10	6	6	78	100	3.0	13.0	4 x M16	2.8
40	80	15	6	6	88	110	3.0	13.0	4 x M16	3.3
50	85	15	9	8	102	125	4.0	16.0	4 x M16	4.6
65	100	20	9	8	122	145	4.0	16.0	8 x M16	5.5
80	110	20	13	10	138	160	4.0	16.0	8 x M16	6.6
100	110	25	13	10	158	180	5.0	20.0	8 x M16	9.0
125	120	25	14	10	188	210	4.5	19.5	8 x M16	12.0
150	130	25	14	8	212	240	5.0	23.0	8 x M20	17.0
200	140	30	14	8	268	295	5.0	25.0	8 x M20	27.4
250	165	30	14	6	320	350	7.5	29.5	12 x M20	35.5
300	175	30	15	6	370	400	6.0	31.0	12 x M20	57.9
350	190	30	15	6	430	460	7.5	37.5	16 x M20	78.8
400	190	35	15	6	482	515	7.5	37.5	16 x M24	90.2
500	190	35	20	5	585	620	8.0	38.0	20 x M24	101.9

DN	Overpressure resistance (10 ⁵ Pa) at				Vacuum resistance (10 ⁵ Pa) at			
	23° C	100° C	150° C	200° C	23° C	100° C	150° C	200° C
15	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
20	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
25	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
32	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
40	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
50	10.0	10.0	7.5	5.3	-1.00	-1.00	-1.00	-1.00
65	10.0	8.3	6.3	4.7	-1.00	-1.00	-1.00	-1.00
80	10.0	8.3	6.3	4.7	-1.00	-1.00	-1.00	-1.00
100	10.0	8.3	6.3	4.7	-1.00	-1.00	-1.00	-1.00
125	10.0	6.9	5.2	3.6	-1.00	-1.00	-1.00	-0.80
150	10.0	6.9	5.2	3.6	-1.00	-1.00	-1.00	-0.80
200	9.3	4.9	3.7	3.1	-1.00	-1.00	-0.80	-0.55
250	7.2	3.2	2.4	1.7	-1.00	-1.00	-0.70	-0.45
300	7.2	3.2	2.4	1.7	-1.00	-1.00	-0.50	-0.35

Different nominal pipe sizes and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

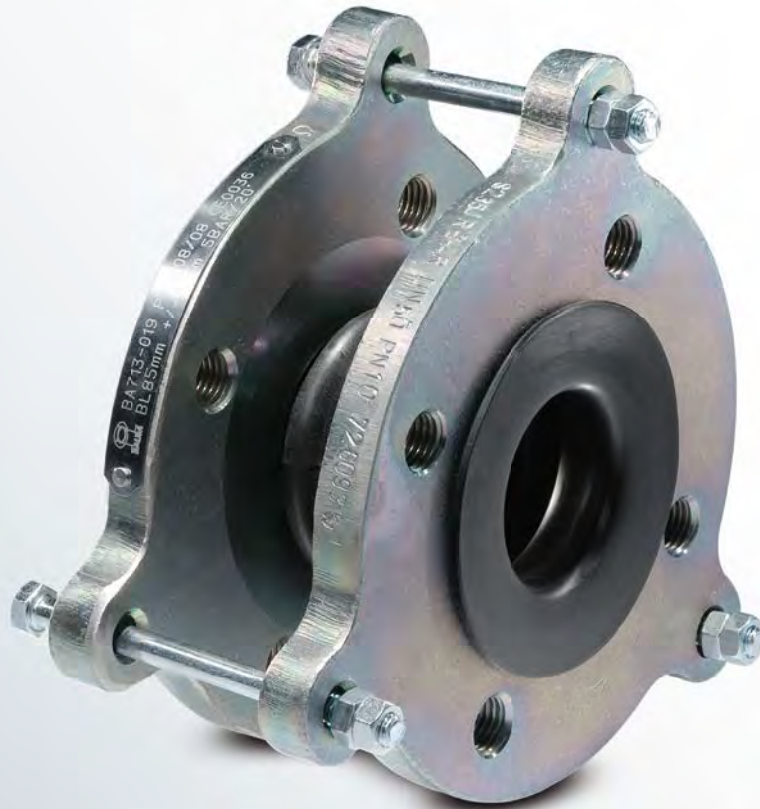
Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movements the single types of travel need to be limited. The figures stated are average and apply to room temperature.

PTFE Expansion Joints. 4 convolutes (PN 10)

Our PTFE Expansion Joints are highly flexible and provide compensation of vibrations and heat-induced expansion in your production line. The possible absorption of movement is increased by a higher number of convolutes.



PTFE Expansion Joints. 4 convolutes (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

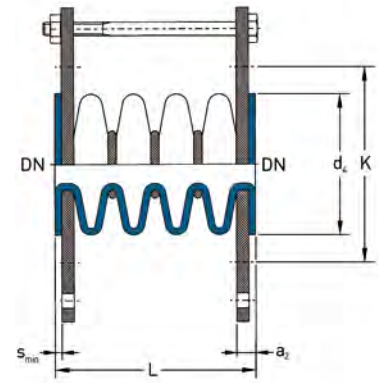
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	d _k (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
15	85	13	6	8	45	65	3.0	13.0	4 x M12	1.4
20	85	13	6	8	58	75	3.0	13.0	4 x M12	1.7
25	85	13	6	8	68	85	3.0	13.0	4 x M12	2.0
32	90	13	6	8	78	100	3.0	13.0	4 x M16	2.9
40	98	18	6	8	88	110	3.0	13.0	4 x M16	3.3
50	105	20	10	9	102	125	4.0	16.0	4 x M16	4.7
65	122	25	10	10	122	145	4.0	16.0	8 x M16	5.6
80	135	26	12	11	138	160	4.0	16.0	8 x M16	6.8
100	137	33	15	13	158	180	5.0	20.0	8 x M16	9.2
125	145	33	15	13	188	210	4.5	19.5	8 x M16	12.4
150	155	33	15	12	212	240	5.0	23.0	8 x M20	17.4
200	175	40	18	10	268	295	5.0	25.0	8 x M20	28.1
250	195	40	18	10	320	350	7.5	29.5	12 x M20	36.4
300	215	45	18	9	370	400	6.0	31.0	12 x M20	59.4
350	235	50	22	8	430	460	7.5	37.5	16 x M20	81.0
400	235	50	22	8	482	515	7.5	37.5	16 x M24	92.6
500	235	50	22	6	585	620	8.0	38.0	20 x M24	105.0

DN	Overpressure resistance (10 ⁵ Pa) at				Vacuum resistance (10 ⁵ Pa) at			
	23° C	100° C	150° C	200° C	23° C	100° C	150° C	200° C
15	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
20	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
25	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
32	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
40	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
50	10.0	7.4	5.1	3.0	-1.00	-1.00	-1.00	-1.00
65	8.5	6.9	5.1	3.0	-1.00	-0.99	-0.98	-0.96
80	8.0	6.6	4.9	2.9	-0.97	-0.96	-0.94	-0.93
100	7.4	6.2	4.6	2.7	-0.96	-0.92	-0.89	-0.86
125	6.8	5.7	4.3	2.5	-0.93	-0.88	-0.82	-0.77
150	6.1	5.2	4.0	2.2	-0.91	-0.84	-0.77	-0.68
200	5.1	4.5	3.4	1.8	-0.86	-0.77	-0.66	-0.54
250	4.1	3.8	2.8	1.5	-0.81	-0.69	-0.56	-0.40
300	3.3	3.0	2.4	1.1	-0.76	-0.62	-0.48	-0.28

Different nominal pipe sizes
and total lengths on request.

L = Total length

d_k = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movements the single types of travel need to be limited. The figures stated are average and apply to room temperature.

PTFE Expansion Joints. 5 convolutes (PN 10)

Our PTFE Expansion Joints are highly flexible and provide compensation of vibrations and heat-induced expansion in your production line. PTFE Expansion Joints with 5 convolutes allow the maximum absorption of movement.



PTFE Expansion Joints. 5 convolutes (PN 10)

Flange materials:

- carbon steel
- stainless steel

Lining materials:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

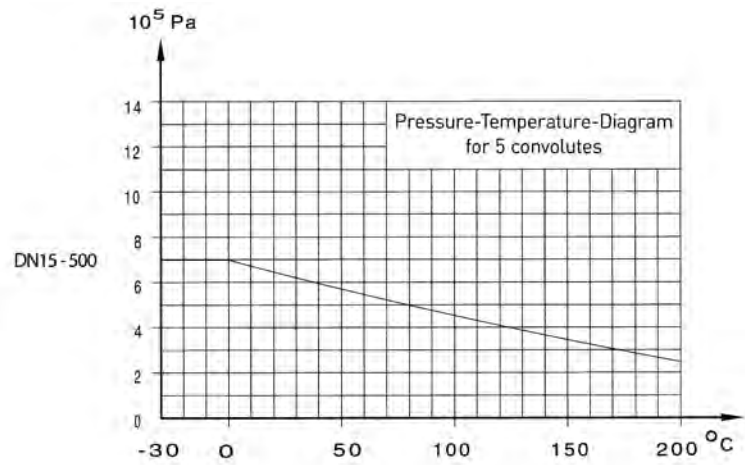
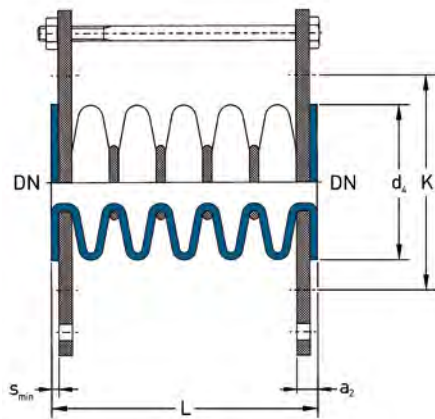
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	stroke ± (mm)	lateral offset (mm)	angular offset max. (°)	Vacuum resistance at				d _k (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/ pc.)
					[10 ⁵ Pa]	max. (°C)	[10 ⁵ Pa]	max. (°C)						
15	68	8	5	20	Please confer with us.				45	65	3.0	11.0	4 x M12	1.2
20	68	8	5	20					58	75	3.0	11.0	4 x M12	1.4
25	68	8	12	20					68	85	3.0	11.0	4 x M12	1.7
32	68	8	12	20					78	100	3.0	13.0	4 x M16	2.8
40	80	13	12	20					88	110	3.0	13.0	4 x M16	3.3
50	88	19	12	20					102	125	4.0	16.0	4 x M16	4.7
65	113	25	13	20					122	145	4.0	16.0	8 x M16	5.7
80	113	25	16	20					138	160	4.0	16.0	8 x M16	6.7
100	139	25	16	20					158	180	5.0	20.0	8 x M16	9.3
125	167	32	16	20					188	210	4.5	19.5	8 x M16	11.9
150	153	32	16	20					212	240	5.0	23.0	8 x M20	16.9
200	207	32	16	20					268	295	5.0	25.0	8 x M20	26.9
250	300	32	16	20					320	350	7.5	29.5	12 x M20	37.3
300	288	35	18	20					370	400	6.0	31.0	12 x M20	56.0
350	325	35	18	20					430	460	7.5	32.5	16 x M20	74.9
400	343	40	25	20					482	515	7.5	32.5	16 x M24	86.0
450	470	40	25	20					532	565	8.0	33.0	20 x M24	99.8
500	520	40	25	20					585	620	8.0	33.0	20 x M24	107.4

The above shown diagram is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

Different nominal pipe sizes and total lengths on request.

L = Total length

d_k = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flange thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

PTFE Expansion Joints. 5 convolutes (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

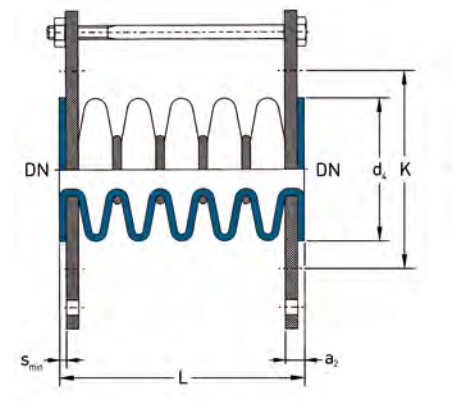
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset max. (°)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
15	100	15	8	10	45	65	3.0	13.0	4 x M12	1.4
20	100	15	8	10	58	75	3.0	13.0	4 x M12	1.8
25	100	15	8	10	68	85	3.0	13.0	4 x M12	2.1
32	105	15	8	10	78	100	3.0	13.0	4 x M16	2.9
40	115	20	8	12	88	110	3.0	13.0	4 x M16	3.4
50	125	25	12	12	102	125	4.0	16.0	4 x M16	4.7
65	145	30	15	14	122	145	4.0	16.0	8 x M16	5.7
80	160	35	18	16	138	160	4.0	16.0	8 x M16	6.9
100	165	40	18	16	158	180	5.0	20.0	8 x M16	9.4
125	170	40	18	14	188	210	4.5	19.5	8 x M16	12.6
150	180	40	22	13	212	240	5.0	23.0	8 x M20	17.7
200	210	50	22	13	268	295	5.0	25.0	8 x M20	28.7
250	240	50	22	12	320	350	7.5	29.5	12 x M20	37.7
300	250	50	22	10	370	400	6.0	31.0	12 x M20	60.4
350	265	50	25	8	430	460	7.5	37.5	16 x M20	82.2
400	265	50	25	7	482	515	7.5	37.5	16 x M24	94.0
500	280	50	25	6	585	620	8.0	38.0	20 x M24	107.6

DN	Overpressure resistance (10 ⁵ Pa) at				Vacuum resistance (10 ⁵ Pa) at			
	23° C	100° C	150° C	200° C	23° C	100° C	150° C	200° C
15	8.0	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
20	8.0	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
25	8.0	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
32	8.0	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
40	8.0	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
50	7.9	6.1	4.5	2.9	-1.00	-1.00	-1.00	-1.00
65	7.5	5.8	4.2	2.7	-0.98	-0.97	-0.94	-0.94
80	7.1	5.5	4.0	2.5	-0.96	-0.93	-0.89	-0.88
100	6.5	5.2	3.8	2.3	-0.92	-0.89	-0.83	-0.80
125	5.9	4.7	3.5	2.1	-0.88	-0.83	-0.76	-0.72
150	5.4	4.4	3.2	1.9	-0.84	-0.79	-0.69	-0.63
200	4.4	3.8	2.8	1.5	-0.76	-0.70	-0.57	-0.48
250	3.6	3.2	2.3	1.1	-0.69	-0.61	-0.48	-0.34
300	3.0	2.6	1.8	1.0	-0.63	-0.54	-0.38	-0.20

Different nominal pipe sizes and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

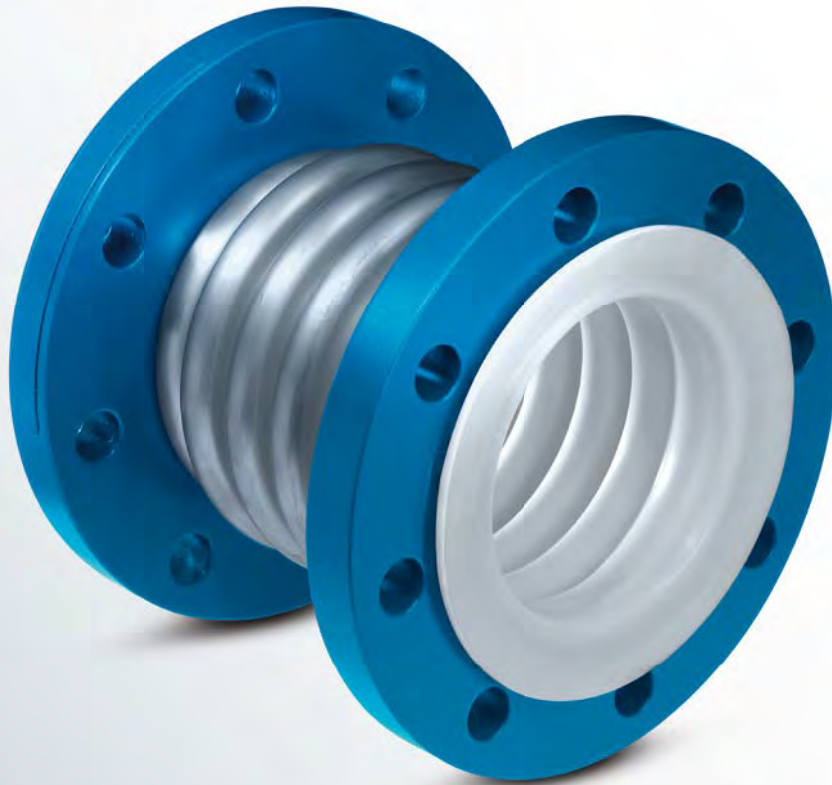
a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

PTFE Lined Stainless Steel Expansion Joints (PN 10)

In case of high pressures and high temperatures, our PTFE Lined Stainless Steel Expansion Joints are the right choice for your pipes.

Stainless Steel Expansion Joints are the most stable expansion joints.



PTFE Lined Stainless Steel Expansion Joints (PN 10)

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Bellow material:

- stainless steel

Flanges:

- loose-loose

Other pressure level:

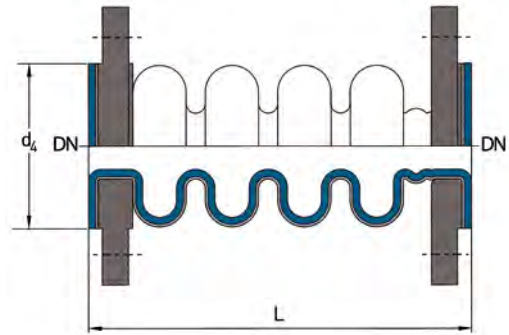
- PN 16

Special features:

- earthing stud/lug

Optional extras:

- final painting (flanges)



DN	L (mm)	Stroke ± (mm)	Axial spring rate (N/mm)	Vacuum resistance (10 ⁵ Pa) at		d ₄ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
				23° C	160° C			
32	145	4.5	260	0.15	0.30	78	4 x M16	4.0
32	220	9.0	130	0.15	0.30	78	4 x M16	4.0
40	155	5.5	272	0.15	0.30	88	4 x M16	5.0
40	240	11.0	136	0.15	0.30	88	4 x M16	5.0
50	177	6.5	276	0.15	0.30	102	4 x M16	6.0
50	292	13.5	195	0.15	0.30	102	4 x M16	6.0
65	179	8.5	234	0.15	0.30	122	8 x M16	7.0
65	285	16.0	173	0.15	0.30	122	8 x M16	7.5
80	183	10.0	220	0.15	0.30	138	8 x M16	7.5
80	273	17.5	178	0.15	0.30	138	8 x M16	8.5
100	178	10.0	365	0.15	0.30	158	8 x M16	10.0
100	266	20.0	183	0.15	0.30	158	8 x M16	11.5
125	221	14.5	290	0.25	0.40	188	8 x M16	13.0
125	363	25.0	290	0.25	0.40	188	8 x M16	15.0
150	248	15.0	560	0.25	0.40	212	8 x M20	17.0
150	388	30.0	280	0.25	0.40	212	8 x M20	20.0
200	246	21.0	412	0.35	0.50	268	8 x M20	24.0
200	418	39.0	335	0.35	0.50	268	8 x M20	30.0
250	243	22.0	525	0.40	0.60	320	12 x M20	32.0
250	392	40.5	269	0.40	0.60	320	12 x M20	35.0
300	287	27.5	480	0.50	0.75	370	12 x M20	37.0
300	429	47.5	352	0.50	0.75	370	12 x M20	43.0
350	296	30.0	460	0.50	0.75	430	16 x M20	51.0
350	407	46.0	378	0.50	0.75	430	16 x M20	57.0
400	290	26.0	713	0.70	0.90	482	16 x M24	68.0
400	434	52.0	357	0.70	0.90	482	16 x M24	75.0
450	328	35.0	548	0.70	0.90	532	20 x M24	76.0
450	535	65.0	430	0.70	0.90	532	20 x M24	97.0
500	309	28.0	955	-	-	585	20 x M24	97.0
500	509	63.0	425	-	-	585	20 x M24	113.0
600	336	35.0	548	-	-	685	20 x M27	118.0
600	484	63.0	305	-	-	685	20 x M27	130.0

Different nominal pipe sizes and
total lengths on request.

L = Total length

d₄ = Raised face diameter

Technical data valid for the pressure level PN 10.

PTFE Vacuum Expansion Joints (PN 10)

PTFE Vacuum Expansion Joints allow full vacuum, also in case of large nominal widths and high temperatures.



PTFE Vacuum Expansion Joints (PN 10)

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

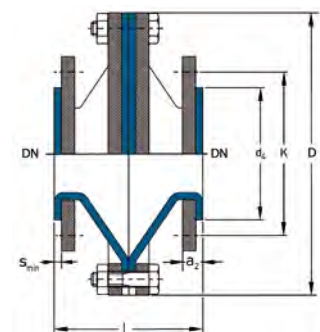
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	D (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
100	95	10	302	158	180	7.5	22.5	8 x M16	13.4
150	100	15	350	212	240	7.5	25.5	8 x M20	20.6
200	105	15	422	268	295	7.5	27.5	8 x M20	29.8
250	110	18	476	320	350	7.5	29.5	12 x M20	36.4
300	115	18	535	370	400	7.5	32.5	12 x M20	50.1
350	120	18	590	430	460	7.5	32.5	16 x M20	60.1
400	135	20	670	482	515	7.5	32.5	16 x M24	71.1
450	150	20	745	532	565	7.5	32.5	20 x M24	82.1
500	160	20	770	585	620	8.0	33.0	20 x M24	79.0

Different nominal pipe sizes and total lengths on request.

L = Total length

D = Outer diameter

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

a₂ = Minimum length with loose flange and s_{min}

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Vacuum Expansion Joint. The figures stated are average and apply to room temperature.

DN	Overpressure resistance (10 ⁵ Pa) at		Vacuum resistance (10 ⁵ Pa) at
	23° C	200° C	200° C
100	3.0	3.0	-1.0
150	3.0	3.0	-1.0
200	3.0	3.0	-1.0
250	3.0	3.0	-1.0
300	3.0	3.0	-1.0
350	3.0	3.0	-1.0
400	3.0	1.0	-1.0
450	3.0	1.0	-1.0
500	3.0	1.0	-1.0

PTFE Vacuum Expansion Joints (PN 10) – new design

Designs:

- up to nominal pipe size DN 100 with two ears
- from nominal pipe size DN 125 with three ears
- up to nominal pipe size DN 65 with threaded holes
- from nominal pipe size DN 80 with through holes

Flange materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges:

- loose-loose

Other pressure levels:

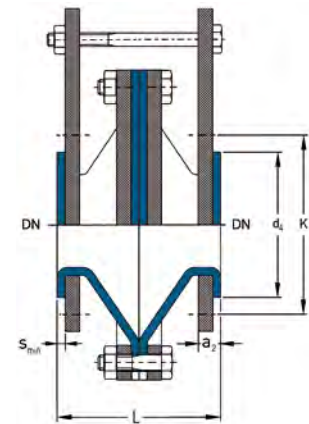
- on request

Special features:

- limit bolts/hole extensions
- earthing stud/lug

Optional extras:

- final painting



DN	L (mm)	Stroke ± (mm)	Lateral offset (mm)	Angular offset (mm)	d ₄ (mm)	K (mm)	s _{min} (mm)	a ₂ (mm)	No. of bolts x thread	Weights (ca. kg/pc.)
100	150	12	3	4	158	180	7.5	22.5	8 x M16	19.0
125	150	12	4	4	188	210	7.5	22.5	8 x M16	24.4
150	150	12	4	4	212	240	7.5	25.5	8 x M20	29.8
200	150	15	5	4	268	295	7.5	27.5	8 x M20	44.2
250	150	15	6	4	320	350	7.5	29.5	12 x M20	53.4
300	150	20	7	4	370	400	7.5	32.5	12 x M20	77.6
350	160	20	7	4	430	460	7.5	37.5	16 x M20	102.1
400	160	20	8	3	482	515	7.5	37.5	16 x M24	118.5
500	160	20	9	3	585	620	8.0	38.0	20 x M24	130.1
600	170	20	10	3	685	725	7.0	37.0	20 x M27	173.7
700	170	25	10	2	800	840	7.0	37.0	24 x M27	208.0
800	170	25	11	2	905	950	7.0	37.0	24 x M30	252.9
900	170	25	12	2	1005	1050	8.0	38.0	28 x M30	278.2
1000	170	25	12	2	1110	1160	8.0	38.0	28 x M33	317.9

DN	Overpressure resistance (10 ⁵ Pa) at		Vacuum resistance (10 ⁵ Pa) at
	23° C	200° C	200° C
100	3.0	3.0	-1.0
125	3.0	3.0	-1.0
150	3.0	3.0	-1.0
200	3.0	3.0	-1.0
250	3.0	3.0	-1.0
300	3.0	3.0	-1.0
350	3.0	3.0	-1.0
400	3.0	1.0	-1.0
450	3.0	1.0	-1.0
500	3.0	1.0	-1.0
600	3.0	1.0	-1.0
700	1.0	0.5	-1.0
800	0.5	0.3	-1.0
900	0.1	0.1	-1.0
1000	0.0	0.0	-1.0

Different nominal pipe sizes and total lengths on request.

L = Total length

d₄ = Raised face diameter

K = Bolt circle diameter

s_{min} = Minimum flare thickness

Technical data valid for the pressure level PN 10.

a₂ depends on construction type and lining thickness.

The overpressure resistance is only valid at neutral position of the PTFE Vacuum Expansion Joint with limit bolts in place. The types of travel stroke, lateral offset and angular offset are maximum allowable movements in only one direction. For superpositioned movement the single types of travel need to be limited. The figures stated are average and apply to room temperature.

Spectacle Blinds



Spectacle Blinds (PN 10)

With Spectacle Blinds it is possible to separate pipe sections.



Spectacle Blinds (PN 10)

Materials:

- carbon steel
- stainless steel

Lining material:

- PFA (virgin or conductive)

Other pressure levels:

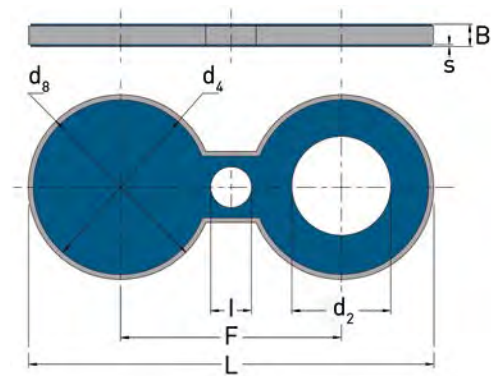
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug

Optional extras:

- final painting



DN	L	B _{min}	d ₂	d ₄	d ₈	s	F	I	Weights
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(ca. kg/pc.)
15	115	20	14.3	45	50	4.0	65	14	0.5
20	135	22	14.3	58	60	4.0	75	14	0.8
25	155	22	20.5	68	70	4.0	85	14	1.1
32	182	22	29.2	78	82	4.0	100	18	1.4
40	202	22	35.1	88	92	4.0	110	18	1.8
50	232	22	46.5	102	107	4.0	125	18	2.3
65	272	22	62.3	122	127	4.0	145	18	3.1
80	302	24	74.5	138	142	4.0	160	18	4.3
100	342	24	99.1	158	162	4.0	180	18	5.2
125	402	26	124.0	188	192	4.0	210	18	7.9
150	458	26	151.0	212	218	4.0	240	22	9.8
200	568	32	199.0	268	273	4.0	295	22	18.8
250	678	34	252.0	320	328	4.0	350	22	27.9
300	778	34	302.0	370	378	4.0	400	22	35.8
400	1005	34	382.0	482	490	4.0	515	26	61.4

Different nominal pipe sizes and total lengths on request.

L = Total length

B_{min} = Minimum thickness

d₂ = Inner diameter

d₄ = Raised face diameter

d₈ = Outer diameter

s = Lining thickness

F = Distance of the circle centers

I = Quick-release axle diameter

Technical data valid for the pressure level PN 10.

B depend on construction type and lining thickness.

DN	Lining thickness		Possible vacuum		
	standard	thick-walled	23° C	150° C	200° C
25	●	●	▬	▬	▬
40	●	●	▬	▬	▬
50	●	●	▬	▬	▬
80	●	●	▬	▬	▬
100	●	●	▬	▬	▬
150	●	●	▬	▬	▬
200	●	●	▬	▬	▬
250	●	●	▬	▬	▬
300	●	●	▬	▬	▬

Vacuum resistance:

▬ = full vacuum

▬ = limited vacuum

▬ = no vacuum

Please refer to the next higher nominal pipe size if your nominal pipe size is not listed.

Nozzle Liners / Dip Pipes



PTFE Nozzle Liners (PN 10)

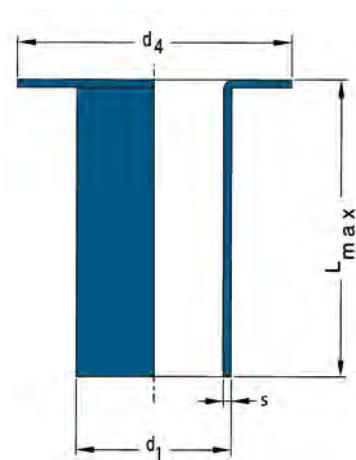
PTFE Nozzle Liners protect tank walls during the filling with corrosive media.



PTFE Nozzle Liners (PN 10)

Material:

- PTFE (virgin or conductive)



DN	L _{max}	d ₁	d ₄	s	Tolerance for d ₁	Weights
	(mm)	(mm)	(mm)	(mm)	± (mm)	(ca. kg/m)
25	6000	21	62	3.0	2	0.4
32	6000	29	78	3.0	2	0.5
40	6000	34	88	4.0	2	0.8
50	6000	46	102	4.0	3	1.1
65	6000	59	122	4.0	4	1.5
80	6000	74	138	4.0	4	1.9
100	6000	94	158	4.0	5	2.4
125	6000	120	188	4.5	5	3.5
150	6000	144	212	4.5	5	4.2
200	6000	186	268	5.0	6	6.1
250	4000	231	320	5.0	10	7.6
300	4000	288	370	5.0	10	9.6
350	4000	315	430	5.0	10	10.5
400	4000	370	482	7.5	10	18.4
500	2000	470	585	8.0	10	25.0

Different outer diameters of the pipe and raised face diameters on request.

L_{max} = Maximum total length

d₁ = Outer diameter of the pipe

d₄ = Raised face diameter

s = Lining thickness

Technical data valid for the pressure level PN 10.

PTFE-lined Dip Pipes (PN 10)

PTFE-lined Dip Pipes allow the precise feeding of corrosive media into tanks. Nozzle heads additionally offer the possibility of a directed dispersion of operating media.



PTFE-lined Dip Pipes (PN 10) for calm vessels (standard type)

Designs:

- welded
- seamless

Materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Other pressure levels:

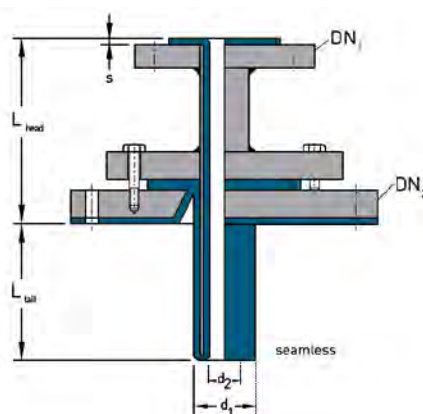
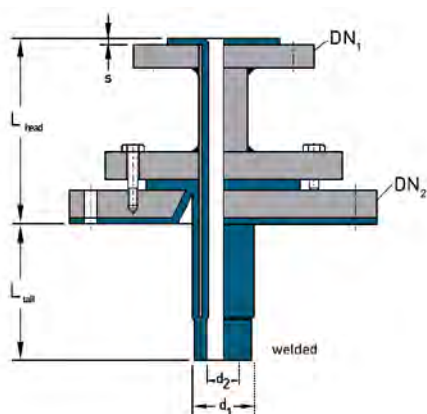
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extensions
- nozzle head

Optional extras:

- final painting
- bended design



DN ₁	DN ₂	Steel pipe outer diam. x wall (mm x mm)	L _{Head} (mm)	L _{tail, max} (mm)		d ₁ (mm)	d ₂ (mm)	s (mm)
				welded	seamless			
25	Please indicate with your order.	33.7 x 2.6	150	4000	2800	21.5	40.7	3.5
32		42.4 x 2.6	150	4000	2800	29.2	50.4	4.0
40		48.3 x 2.6	150	4000	2800	35.1	56.3	4.0
50		60.3 x 2.9	150	4000	2800	46.5	68.3	4.0
65		76.1 x 2.9	150	4000	2800	62.3	84.1	4.0
80		88.9 x 3.2	150	4000	2800	74.5	96.9	4.0
100		114.3 x 3.6	150	4000	2500	97.1	124.3	5.0
125		139.7 x 4.0	150	4000	2500	122.7	148.7	4.5
150		168.3 x 4.5	150	4000	2500	149.3	178.3	5.0
200		219.1 x 6.3	150	4000	2000	196.5	229.1	5.0
250		273.0 x 6.3	150	3000	1500	248.4	285.0	6.0
300		323.9 x 7.1	150	3000	1500	297.7	335.9	6.0
350		355.6 x 8.0	150	2000	-----	327.6	367.6	6.0
400		406.4 x 8.8	150	2000	-----	378.8	416.4	5.0

Different nominal pipe sizes and wall thicknesses on request.

L_{head} = Total length head
 L_{tail, max} = Maximum total length tail
 d₁ = Outer diameter of the pipe
 d₂ = Inner diameter of the pipe
 s = Lining thickness

Technical data valid for the pressure level PN 10.

PTFE-lined Dip Pipes (PN 10) for agitated vessels (reinforced type)

Designs:

- welded
- seamless

Materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Other pressure levels:

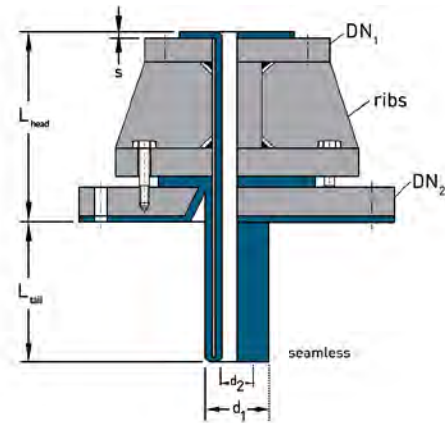
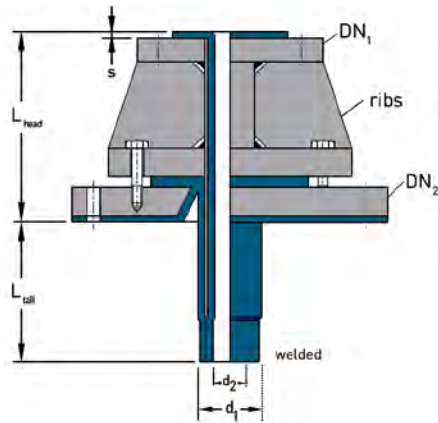
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- vent hole extensions
- nozzle head

Optional extras:

- final painting
- bended design



DN ₁	DN ₂	Steel pipe outer diam. x wall (mm x mm)	L _{Head} (mm)	L _{tail, max} (mm)		d ₁ (mm)	d ₂ (mm)	s (mm)
				welded	seamless			
25	Please indicate with your order.	33.7 x 4.0	150	4000	2000	18.7	40.7	3.5
32		42.4 x 6.3	150	4000	2000	21.8	50.4	4.0
40		48.3 x 6.3	150	4000	2000	27.7	56.3	4.0
50		60.3 x 8.0	150	4000	-	36.3	68.3	4.0
65		76.1 x 10.0	150	4000	-	48.1	84.1	4.0
80		88.9 x 10.0	150	4000	-	60.9	96.9	4.0
100		114.3 x 10.0	150	4000	-	84.3	124.3	5.0
125		139.7 x 10.0	150	4000	-	110.7	148.7	4.5
150		168.3 x 16.0	150	4000	-	126.3	178.3	5.0
200		219.1 x 16.0	150	4000	-	177.1	229.1	5.0
250		273.0 x 16.0	150	3000	-	229.0	285.0	6.0
300		323.9 x 16.0	150	3000	-	279.9	335.9	6.0

Different nominal pipe sizes and wall thicknesses on request.

- L_{head} = Total length head
 L_{tail, max} = Maximum total length tail
 d₁ = Outer diameter of the pipe
 d₂ = Inner diameter of the pipe
 s = Lining thickness

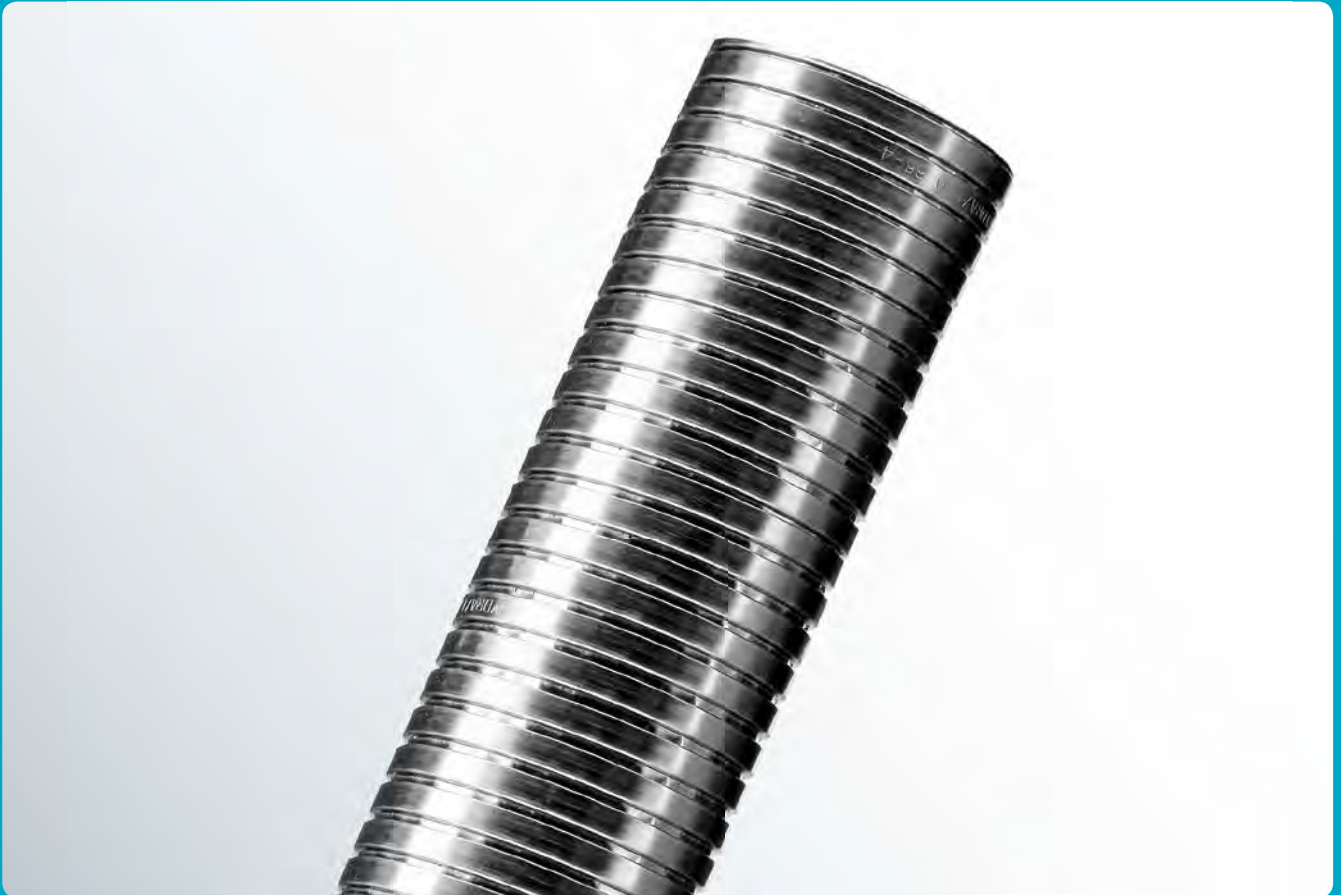
Technical data valid for the pressure level PN 10.

Hoses



PTFE Chemical Transfer Hoses (PN 10) – smooth bore with stripwound house

The stripwound hose is a metal protection hose with a high mechanical strength, for higher pressures; the hose is torsion-proofed, high tensile and it has a straight PTFE liner.



PTFE Chemical Transfer Hoses (PN 10) – smooth bore with stripwound house

Materials Flanges:

- carbon steel
- stainless steel

Material Hoses:

- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

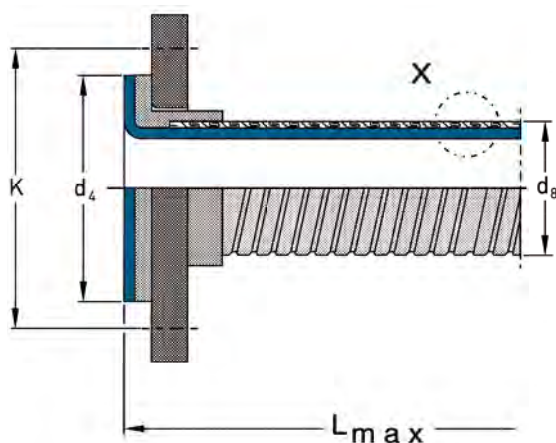
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- flange stopper

Optional extras:

- final painting (flanges)



Detail X



DN	L _{max} (mm)	Min. bend radius (mm)	Max. working pressure (10 ⁵ Pa)	d ₄ (mm)	d ₈ (mm)	K (mm)	No. of bolts x thread	Weights	
								Hose (ca. kg/m)	Flange (ca. kg/Seite)
15	5000	325	10.0	45	19	65	4 x M12	0.5	0.7
20	5000	350	10.0	58	23	75	4 x M12	0.6	0.9
25	5000	350	10.0	68	28	85	4 x M12	0.9	1.1
32	5000	400	10.0	78	35	100	4 x M16	1.1	1.8
40	5000	550	10.0	88	45	110	4 x M16	1.6	2.1
50	5000	750	10.0	102	55	125	4 x M16	2.0	2.7
80	5000	1300	10.0	138	87	160	8 x M16	5.0	3.6
100	5000	1500	7.5	158	100	180	8 x M16	6.8	4.4

Different nominal pipe sizes and other construction types on request.

L_{max} = Maximum length

d₄ = Raised face diameter

d₈ = Outer diameter

K = Bolt circle diameter

Technical data valid for the pressure level PN 10.

PTFE Chemical Transfer Hoses (PN 10) – smooth bore/annularly corrugating/wire braid

The annularly corrugated hose shows a multitude of self-contained and parallel metal convolutes in equal distance. The annularly corrugated hose has a braiding

to increase the pressure resistance. It has a straight PTFE lining.



PTFE Chemical Transfer Hoses (PN 10) – smooth bore with annularly corrugating and wire braid

Materials Flanges:

- carbon steel
- stainless steel

Material Hoses:

- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

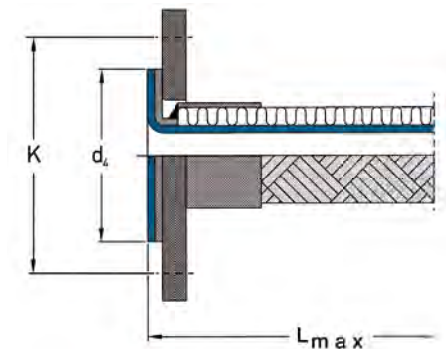
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/luge
- flange stopper

Optional extras:

- final painting (flanges)



DN	L _{max} (mm)	Min. bend radius (mm)	Max. working pressure (10 ⁵ Pa)	d ₄ (mm)	K (mm)	No. of bolts x thread	Weights	
							Hose (ca. kg/m)	Flange (ca. kg/Seite)
25	5000	350	25	68	85	4 x M12	0.8	1.1
32	5000	400	20	78	100	4 x M16	1.0	1.8
40	5000	550	16	88	110	4 x M16	1.6	2.1
50	5000	750	16	102	125	4 x M16	1.6	2.7
65	5000	1000	14	122	145	8 x M16	1.8	3.2
80	5000	1300	12	138	160	8 x M16	2.6	3.6
100	5000	1500	10	158	180	8 x M16	3.5	4.4
125	5000	1800	10	188	210	8 x M16	5.8	5.4
150	5000	2000	10	212	240	8 x M20	8.2	7.1
200	5000	2500	10	268	295	8 x M20	11.0	9.3

Different nominal pipe sizes and other construction types on request.

L_{max} = Maximum length

d₄ = Raised face diameter

K = Bolt circle diameter

Technical data valid for the pressure level PN 10.

PTFE Spiral Hoses (PN 10)

The spiral-convoluted PTFE hose offers a high flexibility, but shows a low pressure resistance.



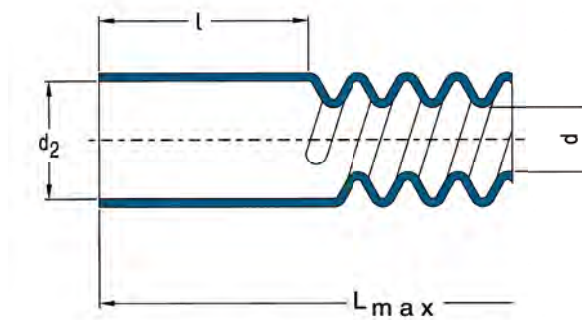
PTFE Spiral Hoses (PN 10)

Lining material:

- PTFE (virgin or conductive)

Other pressure levels:

- PN 16
- PN 25
- PN 40



DN	L_{max}	L	Min. bend radius	Max. working pressure	d	d_2	Weights
	(mm)	(mm)	(mm)	(10^5 Pa)	(mm)	(mm)	(ca. kg/m)
15	5000	50	60	1.50	15	23	0.4
20	5000	50	60	1.50	19	30	0.5
25	5000	50	80	1.50	25	35	0.5
40	5000	75	110	1.25	38	48	0.6
50	5000	75	210	1.25	45	58	0.9
80	5000	100	400	1.25	70	90	1.8
100	5000	100	550	1.00	95	115	2.8

Different nominal pipe sizes and other construction types on request.

L_{max} = Maximum length

L = Cylindrical ending

d = Inner diameter of the spiral tube

d_2 = Inner diameter cylindrical

Technical data valid for the pressure level PN 10.

PTFE Spiral Hoses (PN 10) with flanges

The spiral-convoluted PTFE hose offers a high flexibility, but shows a low pressure resistance. For connection with PTFE flared flanges.



PTFE Spiral Hoses (PN 10) with flanges

Materials:

- carbon steel
- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

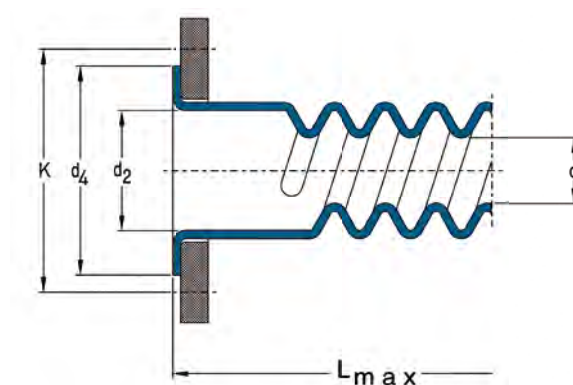
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug

Optional extras:

- final painting



DN	L _{max} (mm)	Min. bend radius (mm)	Max. working pressure (10 ⁵ Pa)	d (mm)	d ₂ (mm)	d ₄ (mm)	K (mm)	No. of bolts x thread	Weights	
									Hose (ca. kg/m)	Flange (ca. kg/side)
15	5000	60	1.50	15	23	45	65	4 x M12	0.4	0.7
20	5000	60	1.50	19	30	58	75	4 x M12	0.5	0.9
25	5000	80	1.50	25	35	68	85	4 x M12	0.5	1.1
40	5000	110	1.25	38	48	88	110	4 x M16	0.6	2.1
50	5000	210	1.25	45	58	102	125	4 x M16	0.9	2.7
80	5000	400	1.25	70	90	138	160	8 x M16	1.8	3.6
100	5000	550	1.00	95	115	158	180	8 x M16	2.8	4.4

Different nominal pipe sizes and other construction types on request.

L_{max} = Maximum length

d = Inner diameter of the spiral tube

d₂ = Inner diameter cylindrical

d₄ = Raised face diameter

K = Bolt circle diameter

Technical data valid for the pressure level PN 10.

PTFE Spiral Hoses (PN 10) with flanges and wire braid

The spiral-convoluted PTFE hose combines high flexibility with a good pressure resistance. The braiding prevents an elongation in case of compression load and serves as

protection as well as reinforcement of the PTFE Spiral Hose.



PTFE Spiral Hoses (PN 10) with flanges and wire braid

Materials Flanges:

- carbon steel
- stainless steel

Material Hoses:

- stainless steel

Lining material:

- PTFE (virgin or conductive)

Flanges according to EN 1092-1:

- fix-fix
- fix-loose
- loose-loose

Other pressure levels:

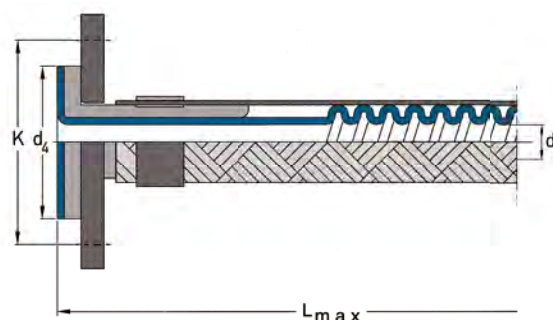
- PN 16
- PN 25
- PN 40

Special features:

- earthing stud/lug
- flange stopper

Optional extras:

- final painting (flanges)



DN	L _{max} (mm)	Min. bend radius (mm)	Max. working pressure (10 ⁵ Pa)	d (mm)	d ₄ (mm)	K (mm)	No. of bolts x thread	Weights	
								Hose (ca. kg/m)	Flange (ca. kg/side)
15	5000	80	10	15	45	65	4 x M12	0.6	0.7
20	5000	80	10	19	58	75	4 x M12	0.9	0.9
25	5000	115	10	25	68	85	4 x M12	1.0	1.1
40	5000	150	10	38	88	110	4 x M16	1.3	2.1
50	5000	200	10	45	102	125	4 x M16	1.8	2.7
80	5000	400	5	70	138	160	8 x M16	3.5	3.6
100	5000	600	5	95	158	180	8 x M16	4.6	4.4

Different nominal pipe sizes and other construction types on request.

L_{max} = Maximum length

d = Inner diameter of the spiral tube

d₄ = Raised face diameter

K = Bolt circle diameter

Technical data valid for the pressure level PN 10.

Special Parts



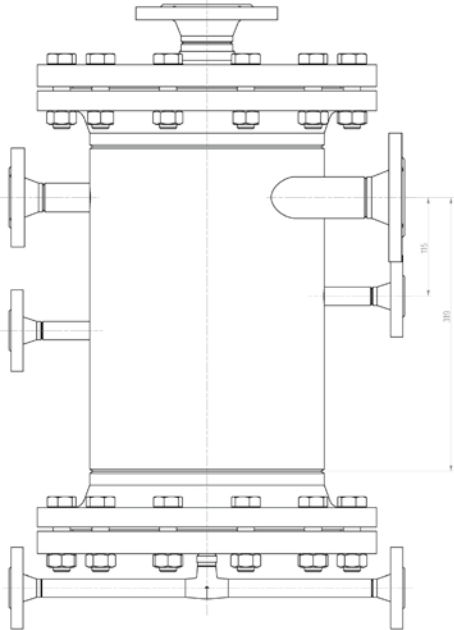
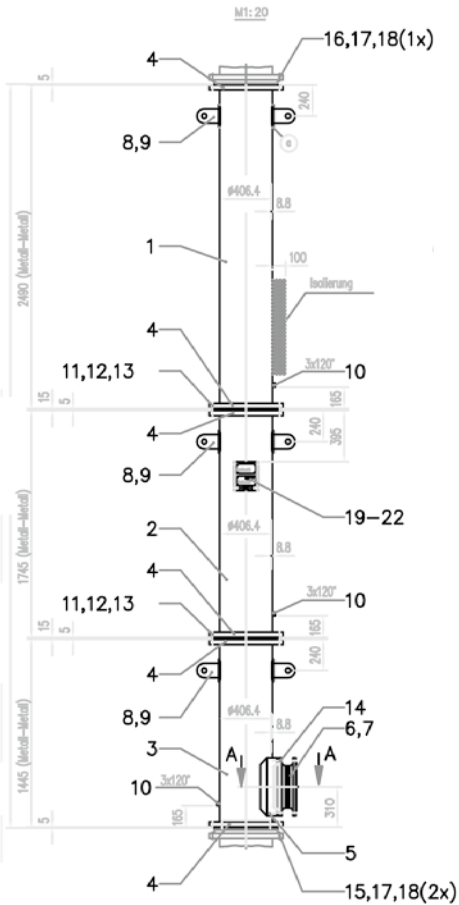
Special parts

If you did not find the piping part you need in this catalogue, please contact us. We also manufacture special forms or dimensions according to your requirements.

Simply send us your technical drawing or a sketch and we will suggest a possible solution.



Special parts



Accessories



A

Accessories

BAUM offers a comprehensive range of accessories for your piping systems, that include Safety Spray Shields and Star Washers (Contact Rings).



Accessories

Star Washer (Contact Rings)

Contact Rings ensure electric contact and conductivity between the lap-joint flange and the stub-end, even though the surface of your piping parts have a final painting. Thus secure earthing is possible with protective finishing. The Contact Rings are gripped between lap-joint flange and loose flange. The contacts of the rings breach

the painting. The Contact Rings are manufactured from spring steel and can be applied to the following nominal pipe sizes (DN):



DN	
DIN	ANSI
25	1"
32	1 1/4"
40	1 1/2"
50	2"
65	2 1/2"
80	3"
100	4"

Safety Spray Shields

Many chemical plants are operated with highly-aggressive media which can cause environmental pollution or even injury as a result of personal contact. Our Safety Spray Shields offer complete security. We recommend that you consider Safety Spray Shields for flange connections, expansion joints and valves.



Technical Specifications



Technical Specifications

These specifications define the material, technical data, fitting instructions and quality checks for our PTFE-, PFA- or

PP-lined pipes and fittings according to DIN 2848 and DIN 2874.

Contents

1. Materials

- 1.1 Steel parts
- 1.2 Lining
- 1.3 External coating

2. General technical data

- 2.1 Pressure Equipment Directive (PED) 2014/68/EU
- 2.2 Steel pipe dimensions
- 2.3 Flange connections
- 2.4 Weights
- 2.5 Vent holes
- 2.6 Protective covers
- 2.7 Lining thickness
- 2.8 Operating temperatures
- 2.9 Temperature ratings
- 2.10 Operating pressures
- 2.11 Vacuum resistance
- 2.12 Tolerances

3. Quality management

- 3.1 Welding
- 3.2 Material quality certificates
BAUMCert®
- 3.3 Raw material checks
- 3.4 Visual and dimensional checks
- 3.5 Spark tests
- 3.6 Hydrostatic tests
- 3.7 Marking
- 3.8 Certificates

4. Fitting instructions

- 4.1 Protective covers
- 4.2 Gaskets
- 4.3 Tightening torques
- 4.4 Welding operations
- 4.5 Vent holes
- 4.6 Permeation und diffusion

5. Chemical resistance

- 5.1 PTFE
- 5.2 PFA
- 5.3 PP

6. Notes on development

1. Materials

1.1 Steel parts

1.1.1 All steel pipes meet:

carbon steel	DIN EN 10217-2
	DIN EN 10216-2
stainless steel	DIN EN 10217-7
	DIN EN 10216-5

1.1.2 Flanges and stub-ends comply with:

DIN EN 1092-1

1.1.3 Fittings comply with:

carbon steel	DIN EN 10253-2
stainless steel	DIN EN 10253-4

1.2 Lining

1.2.1 Polytetrafluoroethylene (PTFE)

The lining is made from virgin PTFE without any pigments. The minimal material characteristics according to DIN 2874 are:

Tensile strength	26 N/mm ²
Elongation	275%
Specific gravity	2,14 - 2,2 g/cm ³
Colour	white

1.2.2 Perfluoroalkoxy (PFA)

The injected material is pure PFA without any pigments. The minimal material characteristics according to DIN 2874 are:

Tensile strength	21 N/mm ²
Elongation	300%
Specific gravity	2.12 - 2.16 g/cm ³
Colour	white opaque

1.2.3 Polypropylen (PP)

All PP lining is made according to DIN 8078 Type 2. The material characteristics are:

Tensile strength	26 N/mm ²
Elongation	120%
Specific gravity	0.91 g/cm ³
Colour	grey

1.2.4 Conductive lining

Upon request the PTFE and PFA lining can also be manufactured as conductive lining. The colour is deep black. The vertical resistance according to DIN EN 62631-3 does not exceed 108 Ohm at any place.

1.2.5 FDA conformity

Upon customer request the lining of our piping parts complies to the regulations of the Food and Drugs Administration (FDA).

1.2.6 Food Regulatory Declaration of Compliance

Upon request, we will prepare for our customers a Food Regulatory Declaration of Compliance for plastic materials intended for use in the food industry.

1.3 External Coating

1.3.1 Sandblasting

All carbon steel parts are sandblasted according to SA 2.5.

1.3.2 Paint coating

All PTFE-lined carbon steel products are painted with an epoxy-zinc-chromate primer to protect them from corrosion. Special painting on request.

2. General technical data

2.1 Pressure Equipment Directive (PED) 2014/68/EU

The piping parts are manufactured within the Pressure Equipment Directive. They fulfill all requirements of construction, manufacturing and testing. We can issue a declaration of conformity for modules A, A2, B+D, (B+C2), and G for the categories I to IV. We are also authorized to use the CE marking.

2.2 Steel pipe dimensions

The outer pipe dimensions comply with DIN EN 10220.

2.3 Flange connections

Flange connections comply with DIN EN 1092-1.

2.4 Weights of lined pipes and fittings

Please refer to the corresponding data sheets.

2.5 Vent holes

Vent holes should be kept open at all times. They have a dual function. First, they allow any permeating gas to escape. Second, they serve as leakage indicators to ensure rapid repair.

2.6 Protective covers

Flares are protected with water proof plywood covers or plastic caps. All bolts and nuts are galvanized and can easily be loosened.

2.7 Liner thickness

Various operating conditions require different liner thickness. In practice, however, thicker linings offer better safety under vacuum, better resistance against abrasion as well as lower gas permeability. The determination of a suitable lining thickness for a piping part happen in consideration of operating conditions, custom specifications or special requests. In accordance with DIN 2874 the lining thickness must be at least 3 mm.

2. General technical data

2.8 Operating temperatures

Maximum operating temperatures are:

PTFE 230 °C

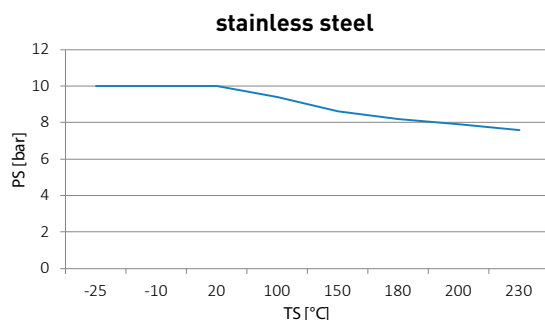
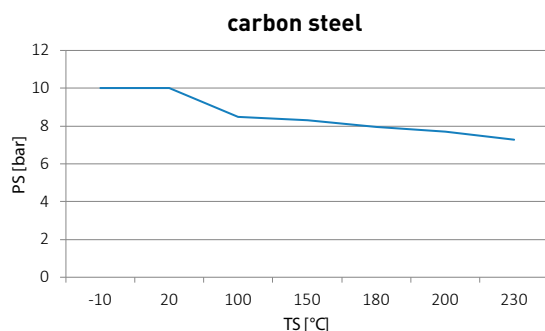
PFA 230 °C

PP 100 °C

These temperatures only apply under optimum conditions. Special demands may require a reduction in vacuum and pressure.

2.9 Temperature ratings

The interrelationship between nominal pressure and operating temperature according to DIN EN 1092-1 and operating limits of piping parts is shown below. Possibly in some cases it may deviate from the pressure-temperature-rating.



2.10 Operating pressures

The design meets the requirements of pressure levels PN 10, PN 25 and PN 40 according to DIN 2848. Other operating pressures are available upon request in special versions.

2.11 Vacuum resistance

The vacuum resistance of the lined piping parts is determined by production technology and liner thickness. Based on your operating environment we can define the optimal liner thickness for your application. The values for vacuum resistance are given in the corresponding data sheets.

2.12 Tolerances

Tolerances are defined in:

DIN EN 10220

DIN 2848

DIN 2874

3. Quality management

3.1 Welding

Our welding processes are subject to the following criteria:

1. We are a certified manufacturer in accordance with AD 2000-Merkblatt HP 0, HP 100 R / DIN EN ISO 3834-2 / DIN EN 13480.
2. Our processes conform to AD 2000-Merkblatt HP 2 / 1 / DIN EN 13480.
3. Our operations are supervised by a certified welding expert.
4. We only employ welders with a AD 2000-Merkblatt HP 3 / DIN EN 13480 certificate.

3.2 Material quality certificates BAUMCert®

All steel pipes, flanges, stub ends and welded steel fittings are certified according to DIN EN 10204 - 3.1.

3.3 Raw material checks

Lining materials are only procured with material quality certificates WAZ 2.2 from manufacturers certified according to ISO 9001.

3.4 Visual and dimensional checks

In addition, our own laboratory continually checks and records the physical data of semifinished products from the production line. The dimensions of all pipes and fittings are checked visually.

3.5 Spark tests

All non-conductive lined pipes and fittings subjected a 25kV or 30kV spark test to make sure the lining is not porous.

3.6 Hydrostatic tests

The hydrostatic test is carried out at the 1.43-times of the nominal pressure.

3.7 Marking

In accordance with DIN 2874, every pipe and fitting is marked on the circumference of the flange as follows:

- Manufacturer's name
- Nominal pipe size
- Production lot
- Lining material
- DIN 2848
- Non-chargeability of the lining
- Date of production
- CE marking (if applicable)

Additional markings - for example material no. etc. - are available upon customer request.

3. Quality management

3.8 Certificates



4. Fitting instructions

4.1 Protective covers

Protective covers must only be removed immediately before fitting.

4.2 Gaskets

Flared surfaces of identical materials (PTFE/PFA) do not require gaskets. Gaskets are only needed for connections frequently undone or for connections to other materials such as metal, glass, enamel, etc.

4.3 Tightening torques (for pressure level PN 10)

When using smooth-running and greased bolts and nuts we recommend the tightening torques in the table below:

DN	Bolts	Tightening torques (Nm)
25	4 x M12	34
32	4 x M16	55
40	4 x M16	68
50	4 x M16	86
65	8 x M16	58
80	8 x M16	71
100	8 x M16	78
125	8 x M16	84
150	8 x M20	141
200	8 x M20	170
250	12 x M20	166
300	12 x M20	160
350	16 x M20	175
400	16 x M24	342
500	20 x M24	288

The torque wrench should be used in a cross manner. Tightening torques for other pressure rates available upon request. Details for assembly and operating instructions can be found in our data sheet FB 8.3.5.

4.4 Welding operations

Lined pipes and fittings may not be welded, as the high temperature will destroy the synthetic material.

4.5 Vent holes

Vent holes should at all times be kept open. Not clog them with paint or insulating material.

4.6 Permeation and diffusion

The term "permeation" defines the particle transport of operating medium in a piping through the lining. Permeation is caused by two physical incidents. First, the diffusion of the operating medium through the spaces between the molecules of the plastic. Second, the solubility of the operating medium in the polymer (absorption). Diffusion can be decreased by the choice of suitable types of PTFE, by increasing the liner thickness and by using higher levels of crystallinity. However, this increases the risk of cracks caused by strain. To ensure optimal product safety all aspects have to be taken into consideration. Absorption defines the diffusion of operating medium into the liner.

Cyclical stress due to temperature or pressure leads to elongation mechanisms which cause aggregations of operating medium and even blisters. Isolation of those piping parts can avoid or reduce those effects considerably.

5. Chemical resistance

5.1 PTFE

PTFE has a universal chemical resistance against almost all chemicals and solvents within its continuous operating temperature - with the exception of molten alkalis, elementary fluorine and certain halogenes.

5.2 PFA

Properties of PFA are comparable to PTFE (see 5.1).

5.3 PP

Please refer to the information specified by the manufacturer.

6. Notes on product development

We reserve the right to vary between the lining materials PTFE and PFA for manufacturing reasons.

This product catalog is based on the experience we have gained up to now, it is intended to provide the user with advice.

All information is to the best of our knowledge and believed to be correct and given without responsibility. Illustrations of products are shown exemplary and do not necessarily represent the actual shape.

Technical changes resulting from the further development of our products may occur without giving prior notice.

Edition 2018