



BAUM KUNSTSTOFFE GMBH

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**BAUM**

# BAUM

Company site and production facilities



# BAUM

## Looking to the Future

With 25 years' experience in PTFE processing, the highly motivated Managing Director of BAUM KUNSTSTOFFE GMBH, Roland Baum, founded the company in 1986. In 1990 the founder's son, Markus Baum entered the company; he is now CEO of the family-run business and continues the lifework of his father.

New processing techniques and flexibility in meeting customer requirements laid the foundation to continuous growth. In 1989, a site was acquired and production and office buildings were erected.

The integration of the successors generation is a guarantee for the continuous development of the family enterprise.

In 1992 further production space became necessary to supply the increasing number of customers.

New production buildings for steel manufacturing and paste extrusion followed in 1997 and 1999. Now BAUM KUNSTSTOFFE GMBH has a production area of 4.700 square metres.

Thus we can uniquely offer you the complete manufacturing process from steel to ready-lined piping parts. This covers the making of steel parts on high-tech equipment as well as the paste-extrusion on specially designed extruders. Lining methods with highly automated production techniques ensure a fast throughput.

We are looking forward to welcoming you as future customer. We are convinced that you will profit from a partnership with the BAUM KUNSTSTOFFE GMBH.

# BAUM

We make pipe parts, dip pipes and expansion joints, protected from corrosion using PTFE, PFA or PP.

We supply all parts in accordance with industrial standards or to customer's specification.

BAUM KUNSTSTOFFE GMBH

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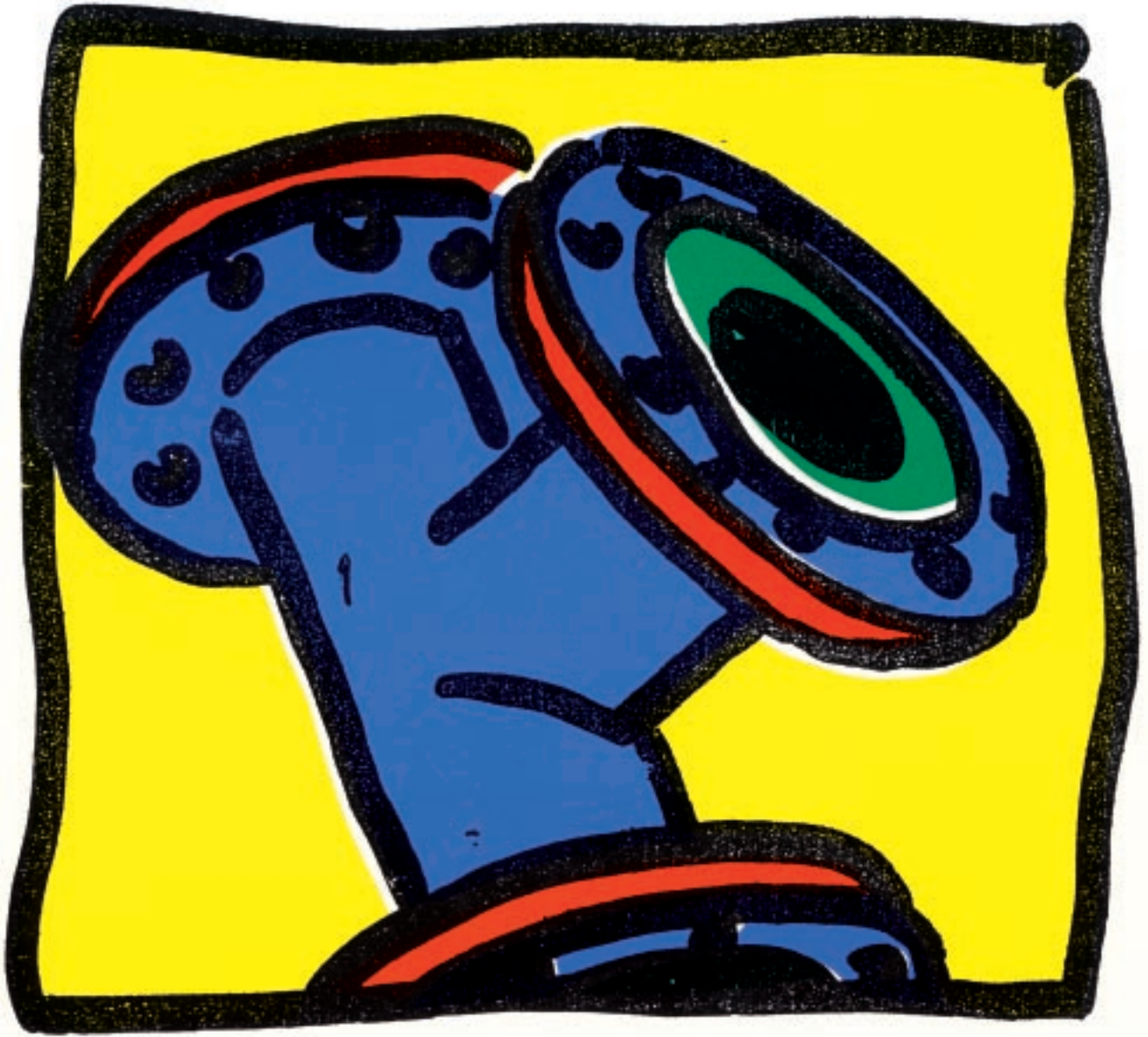
Internet [www.baumkunststoffe.com](http://www.baumkunststoffe.com)

## Criterion no. 1: quality

Each product passes through our stringent quality control and has to meet standards above those normally required.

For you as a planner or plant operator this means a long-term security in all areas.

Regardless of whether we supply you with rigid or flexible elements, lined or with an additional coating, you can rely on BAUM products.



**BAUM**

### **You profit from our experience.**

Mature processing techniques, a comprehensive knowledge of innovative materials and, last but by no means least, the fact that we have worked for many years with the very best suppliers of steel and plastics, makes us your expert partner in piping systems.

Contact us during the planning stage of your project. Especially with tricky problems we will offer unconventional and economical solutions.

### **Whatever you need ...**

Whether you need standard or non-standard parts or a special solution is required there are hardly any parts we cannot make for you. Our full catalogue - the BAUM Book - will show you our comprehensive product range, from a straight pipe to a fitting with complex functionality.

### **... You don't have to look far.**

We want to spare you unnecessary time and trouble. For this reason we have attached great importance to the design of our catalogue. It aims to be a manual, a reference book and a work aid all in one.

You will enjoy working with our BAUM Book and save time into the bargain.



**BAUM**



**We demonstrate flexibility when the problem is tricky.**

This is our great strength. We are flexible and work hard to meet your deadlines. Our well-organised production line can also easily cope with small batches and single items.

Give us a try, and you can rely on your delivery arriving at the agreed time.

**An outstanding service.**

Actually, we don't think much of improvisation, but sometimes particular situations require unusual measures. This means speed when it is a question of assessing a situation on the spot and creativity when a problem has to be solved that doesn't occur every day.





### **Ideas and special cases.**

With further developments in plant construction and the ever growing legal framework new situations come up and special cases for which there is no standard solution. It's worth having a talk with us about this in good time.

You have the right to expect detailed proposals, and it goes with saying that they must be implemented swiftly and in a way that is economically justifiable.



### **You need the right connection.**

You need the right connection in chemical engineering and plant construction. This is even more important in your personal contacts. Mutual trust creates the basis for a successful partnership, something we experience every day. Regular contacts and frequent/open-minded communication are therefore necessary.

We're there when you need us!

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## The BAUM KUNSTSTOFFE on the Net

On the Internet we offer detailed product information about all the DIN- and ANSI piping parts. Additionally you will find up-to-date information about our company and new products.

In many countries we have selected partner companies or own affiliates to better suit your needs where you need the parts.



BAUM KUNSTSTOFFE on the Net

<http://www.baumkunststoffe.com>

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## Technical Specifications

*These specifications define the material, technical data, fitting instructions and quality checks for our PTFE/PFA or PP lined pipes and fittings.*

*They are in accordance with the following standards: ASTM F1545 for general requirements and ASME B16.5 for dimensions.*

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# 1. Material

## 1.1 Steel parts

- 1.1.1 All steel pipes (carbon steel) meet ASTM-A 106 Gr. B
- 1.1.2 Flanges comply with ASTM-A 105
- 1.1.3 Fittings comply with ASTM-A 234 Gr. WPB
- 1.1.4 For stainless steel diverse grades may apply.

## 1.2 Lining

### 1.2.1 PTFE

The lining is made from virginal PTFE (Polytetrafluorethylene) without any addition of pigments - its color is white.

The minimum physical data acc. to ASTM F1545 are:

Tensile strength: 20.7 N/mm<sup>2</sup>  
Elongation: 250%  
Specific Gravity: 2.13-2.21 g/cm<sup>3</sup>

### 1.2.2 PFA

The injected material is pure PFA (Perfluoralkoxy) without any pigments - the color is white opaque.

The physical data according to ASTM F1545 are:

Tensile strength: 26.2 N/mm<sup>2</sup>  
Elongation: 300%  
Specific Gravity: 2.12-2.16 g/cm<sup>3</sup>

### 1.2.3 PP

All PP liner pipes (Polypropylene) are made of material Type II; they are grey (RAL 7032).

Physical Data:

Tensile strength: 20.7 N/mm<sup>2</sup>  
Elongation: 120%  
Specific Gravity: 0.91 g/cm<sup>3</sup>

### 1.2.4 Conductive lining

The resistivity acc. DIN/EC 60093 and DIN/EC 60167 does not exceed 10<sup>8</sup> Ohm at any place.

### 1.2.5 FDA conformity

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

## 1.3 External Coating

### 1.3.1 Sandblasting

All carbon steel parts are sandblasted acc. to SA 2.5.

### 1.3.2 Paint coating

According to our standard specification all carbon steel pipes are painted with an epoxy-zinc-chromate primer to protect them from corrosion.

## 2. General Technical Data

### 2.1 Pressure Equipment Directive (97/23/EC)

If the piping parts are applied within the pressure equipment directive (PED), they fulfill all requirements of construction, manufacturing and testing.

### 2.2 Steel pipe dimensions

Steel pipes according to ASTM A 106 Gr. B: Standard Wall. Fittings according to ASME B 16.9.

### 2.3 Flange connections

Flange connections comply with ASME B 16.5 (Class 150 and 300).

### 2.4 Weights of lined pipes and fittings (for Class 150).

T-pieces, kg/ piece

NPS	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"
1/2"	2																
3/4"	3	3															
1"	3	4	4														
1 1/4"		5	5	6													
1 1/2"		5	6	6	6												
2"			8	8	8	9											
2 1/2"				10	10	11	13										
3"					13	14	14	16									
4"						18	19	19	21								
5"							26	27	28	29							
6"								39	40	42	44						
8"									61	63	64	68					
10"										89	91	94	100				
12"											125	130	135	150			
14"															180		
16"																250	
20"																	300

## 2. General Technical Data

### 2.4 Weights

#### Pipes – Elbows – Spacers, kg/piece

NPS	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"
Pipes kp/m	1	1	2	3	3	5	6	8	11	18	28	39	56	74	96	120	144
Flanges kp	2	2	3	4	4	5	6	8	9	12	14	19	26	35	48	61	85
Elbows 90° kp	2	2	3	4	4	6	8	10	13	16	26	42	70	90	120	150	410
Elbows 45° kp	2	2	3	4	4	5	7	8	11	15	19	30	44	64	91	120	203
Spacers kp/m	10	10	20	25	30	40	50	60	100	110	140	180	290	440	650	730	880

#### Reducing Flanges, kg/piece

NPS	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"
1"	3														
1 1/4"	3	4													
1 1/2"	4	4	4												
2"	5	5	5	5											
2 1/2"	6	6	5	5	5										
3"		6	6	6	6	6									
4"		11	11	11	11	10	10								
5"			14	14	13	13	12	12							
6"				18	17	17	16	15	14						
8"					26	25	25	23	21	21					
10"						36	35	34	32	30	28				
12"							57	55	53	50	45	40			
14"								69	66	61	58	51	49		
16"									84	81	76	68	60	63	
20"										120	110	100	94	89	84

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## 2. General Technical Data

### 2.4 Weights

Instrument-Ts, kg/piece

NPS	1/2"	3/4"	1"	1 1/2"	2"
1"	2	2	2		
1 1/4"	2	2	4		
1 1/2"	2	2	3	4	
2"	3	3	3	6	
2 1/2"	4	4	4	7	10
3"	4	4	4	8	13
4"	6	6	6	10	16
5"	7	7	7	13	21
6"	8	8	8	15	22
8"	10	10	10	18	24
10"	13	13	13	23	26

Reducers, kg/piece

NPS	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"
1"	2														
1 1/4"	3	3													
1 1/2"	3	3	4												
2"		4	5	5											
2 1/2"			6	6	7										
3"				6	7	8									
4"					10	10	11								
5"						12	13	14							
6"							17	18	20						
8"								22	24	26					
10"									33	35	40				
12"										45	48	53			
14"											70	74	80		
16"												99	105	115	
20"															185

## 2. General Technical Data

### 2.5 Liner thickness

In accordance with ASTM F1545 the lining thickness must be 3 mm min. In practice, however, thicker linings mean better safety under vacuum, better resistance against abrasion as well as lower gas permeability.

This is why our PFA lined parts always have a 4 mm thick lining; as far as PTFE is concerned, the following thicknesses represent an accepted standard:

NPS	Liner thickness in mm
1"	3
1 1/4"	3
1 1/2"	3
2"	3
2 1/2"	3
3"	4
4"	4
5"	4,5
6"	5
8"	5

Other lining thickness can be manufactured upon customer demand.

Bigger NB's require the liner thickness to be established according to the operating conditions.

### 2.6 Operating temperatures

Maximum operating temperatures are:

PTFE 230 °C

PFA 230 °C

PP 100 °C

These temperatures only apply under optimum conditions.

Special conditions may require a reduction in vacuum and pressure.

### 2.7 Operating pressures

The design meets the requirements of class 150 and class 300. Please refer to the applicable column in the product details. Other operating pressures are available upon request.

### 2.8 Vacuum resistance

The vacuum resistance of PTFE/PFA lined pipes and fittings is as follows:

NPS 1" to 3" = 0 Torr abs.

up to 230 °C

NPS 4" = 0 Torr abs. up to 150 °C

Bigger NPS's require special attention especially on the fittings; hence all factors should be considered.

Also important: Sudden drop in pressure, slow rise in pressure as well as frequency of such events.

### 2.9 Vent holes

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

### 2.10 Tolerances

Tolerances of pipes and fittings are defined in ASTM F 1545 as well as in ASME B 16.5.

The liner thickness may vary approx. 10%. This applies especially to the area of the flares where the liner thickness may be up to 20% thinner due to plastic stretching.

### 2.11 Protective covers

Flares are protected with a water proof plywood cover or plastic cap. All bolts and nuts are galvanized and can easily be loosened.



## 3. Quality Management

### 3.1 Welding

Our welding processes are subject to the following criteria:

1. We are recognised manufacturer in accordance with AD-Merkblatt HPO/TRD 201/DIN EN 729-2.
2. Our processes conform to AD-Merkblatt HP 2/1.
3. Our operations are supervised by a recognised welding expert.
4. We only employ welders with a HP 3 certificate.

### 3.2 Material certificates

All pipes, flanges, elbows and welded fittings have a works certificate according to EN 10204-3.1.B.

### 3.3 Raw material checks

Lining materials are only procured with material certificates WAZ 2.3 from manufacturers certified acc. to ISO 9001.

In addition, our own laboratory continually checks and records the physical data of semifinished products from the production line.

### 3.4 Optical and dimensional checks

The dimensions of all pipes and fittings are checked visually.

### 3.5 Spark tests

All lined pipes (not conductive) and fittings undergo a 25.000 Volt spark test to make sure the lining is not porous.

### 3.6 Hydrostatic tests

The hydrostatic test is carried out with the 1,43-fold of the nominal working pressure.

### 3.7 Marking

In accordance with ASTM F 1545, every pipe and fitting can be marked on the flange's circumference as follows:

Manufacturer's sign  
Production lot  
Lining material  
Date of production  
CE marking (if applicable)

Additional markings – e.g. material no. – are available upon customer demand.

### 3.8 Certificates

### 3. Quality Management

#### 3.8 Certificates



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## 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 may only be sensible for connections frequently undone or for connections to other materials such as metal, glass, enamel, etc.

### 4.3 Torques (for Class 150 and 300)

Details for assembly and operating instructions can be found in our data

sheet FB 03.4b Assembly and operating instructions.

### 4.4 Welding operations

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

### 4.5 Vent holes

Vent holes should at all times be kept open.

Care should be taken not to clog them with paint or insulating material.

Nominal pipe size NPS	ANSI B 16.5 Class 150			ANSI B 16.5 Class 300		
	no. of bolts x thread	bolt torque in		no. of bolts x thread	bolt torque in	
		ft-lbs	Nm		ft-lbs	Nm
1/2"	4 x 1/2"	10	14	4 x 1/2"	12	17
3/4"	4 x 1/2"	10	14	4 x 5/8"	12	17
1"	4 x 1/2"	10	14	4 x 5/8"	12	17
1 1/2"	4 x 1/2"	15	22	4 x 3/4"	16	22
2"	4 x 1/2"	25	35	8 x 5/8"	19	26
2 1/2"	4 x 5/8"	33	46	8 x 3/4"	29	40
3"	4 x 5/8"	40	58	8 x 3/4"	33	45
4"	8 x 5/8"	30	42	8 x 3/4"	47	65
5"	8 x 3/4"	45	63	8 x 3/4"	69	95
6"	8 x 3/4"	60	84	12 x 3/4"	73	100
8"	8 x 3/4"	75	105	12 x 7/8"	76	105
10"	12 x 7/8"	70	100	16 x 1"	83	115
12"	12 x 7/8"	90	125	16 x 1 1/8"	87	120
14"	12 x 1"	152	210			
16"	16 x 1"	143	198			
18"	16 x 1 1/8"	210	290			
20"	20 x 1 1/8"	190	262			
24"	20 x 1 1/4"	221	305			

## 5. Chemical Resistance

- 5.1 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 identical with PTFE.
- 5.3 PP Please refer to the manufacturer's information.

## 6. Pipe and flange dimensions for lined pipes and fittings

### 6.1 Class 150

NPS	D	D <sub>1</sub>	d <sub>4</sub>	Standard wall (STD)	Schedule			Lining material		
					Sch20	Sch30	Sch40	PTFE		PP
1/2"	88.9	21.3	35.1	2.8	---	---	2.8	●		
3/4"	98.4	26.7	42.9	2.9	---	---	2.9	●		
1"	107.9	33.4	50.8	3.4	---	---	3.4	●		●
1 1/4"	117.5	42.2	63.5	3.6	---	---	3.6	●		●
1 1/2"	127.0	48.3	73.2	3.7	---	---	3.7	●		●
2"	152.4	60.3	91.9	3.9	---	---	3.9	●		●
2 1/2"	177.8	73.0	104.6	5.2	---	---	5.2	●		●
3"	190.5	88.9	127.0	5.5	---	---	5.5	●		●
4"	228.6	114.3	157.2	6.0	---	---	6.0	●		●
5"	254.0	141.3	185.7	6.6	---	---	6.6	●		●
6"	279.4	168.3	215.9	7.1	---	---	7.1	●		●
8"	342.9	219.1	269.7	8.2	---	7.0	8.2	●		●
10"	406.4	273.0	323.9	9.3	6.4	7.8	9.3	●		●
12"	482.6	323.8	381.0	9.5	6.4	8.4	10.3	●		
14"	533.4	355.6	412.8	9.5	---	9.5	11.1	●		
16"	596.9	406.4	469.9	9.5	7.9	9.5	12.7	●		
18"	635.0	457.2	533.4	9.5	7.9	11.1	14.3	●		
20"	698.5	508.0	584.2	9.5	9.5	12.7	15.1	●		

D = outer diameter flange d<sub>4</sub> = outer diameter face

D<sub>1</sub> = diameter pipe

other schedules upon request

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## 6.2 Class 300

NPS	D	D <sub>1</sub>	d <sub>4</sub>	Standard wall (STD)	Schedule			Lining material		
					Sch20	Sch30	Sch40	PTFE		PP
1/2"	95.2	21.3	35.0	2.8	---	---	2.8	●		
3/4"	117.3	26.7	42.9	2.9	---	---	2.9	●		
1"	123.9	33.5	50.8	3.4	---	---	3.4	●		●
1 1/4"	133.3	42.2	63.5	3.6	---	---	3.6	●		●
1 1/2"	155.4	48.3	73.1	3.7	---	---	3.7	●		●
2"	165.1	60.4	91.9	3.9	---	---	3.9	●		●
2 1/2"	190.5	73.1	104.6	5.2	---	---	5.2	●		●
3"	209.5	88.9	127.0	5.5	---	---	5.5	●		●
4"	254.0	114.3	157.2	6.0	---	---	6.0	●		●
5"	279.4	141.3	185.6	6.6	---	---	6.6	●		●
6"	317.5	168.4	215.9	7.1	---	---	7.1	●		●
8"	381.0	219.2	269.7	8.2	---	7.0	8.2	●		●
10"	444.5	273.0	323.8	9.3	6.4	7.8	9.3	●		●
12"	520.7	323.8	381.0	9.5	6.4	8.4	10.3	●		
14"	584.2	355.6	412.7	9.5	---	9.5	11.1	●		
16"	647.7	406.4	469.9	9.5	7.9	9.5	12.7	●		
18"	711.2	457.2	533.4	9.5	7.9	11.1	14.3	●		
20"	774.7	508.0	584.2	9.5	9.5	12.7	15.1	●		

D = outer diameter flange d<sub>4</sub> = outer diameter face

D<sub>1</sub> = diameter pipe

other schedules upon request

## 7. Product development

This documentation 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 belief correct and given without responsibility.

We assume no liability with respect to the execution and nature of our products as well as their performance.

We reserve the right to make technical changes resulting from the further development of our products without giving prior notice.

We reserve the right to change the lining material between PTFE and PFA due to manufacturing reasons.

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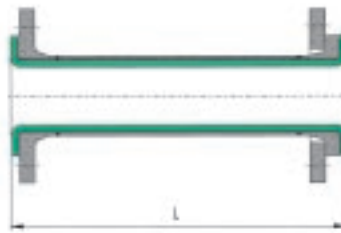
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## Lined Pipes (Class 150 and Class 300)

fixed - fixed



fixed - loose

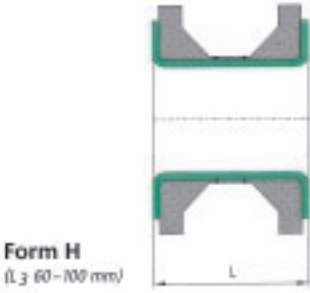


loose - loose



NPS	L <sub>(mm)</sub>		Lining material		
	max.	min.	PTFE		PP
1/2"	6000	65	●		
3/4"	6000	75	●		
1"	6000	75	●		●
1 1/4"	6000	80	●		●
1 1/2"	6000	80	●		●
2"	6000	90	●		●
2 1/2"	6000	90	●		●
3"	6000	100	●		●
4"	6000	100	●		●
5"	6000	100	●		●
6"	6000	100	●		●
8"	6000	120	●		●
10"	3000	130	●		●
12"	3000	130	●		
14"	3000	130	●		
16"	3000	130	●		
18"	3000	130	●		
20"	2000	140	●		

# Spacers (Class 150 and Class 300)



NPS	Lining material		
	PTFE		PP
1/2"	●		●
3/4"	●		●
1"	●		●
1 1/4"	●		●
1 1/2"	●		●
2"	●		●
2 1/2"	●		●
3"	●		●
4"	●		●
5"	●		●
6"	●		●
8"	●		●
10"	●		●
12"	●		●
14"	●		
16"	●		
18"	●		
20"	●		

Spacers in Form F and G are also available as **declined spacer** with a variety of angles.



## Blind Flanges

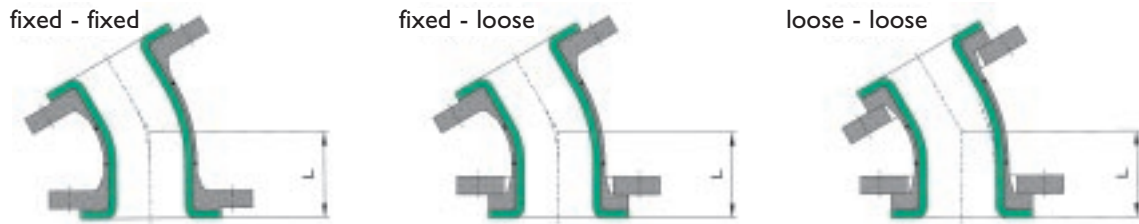


NPS	Class 150		Class 300		Lining material		
	L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE		PP
1/2"	0.47	12.0	0.67	17.0	●		●
3/4"	0.50	12.7	0.75	19.0	●		●
1"	0.56	14.3	0.81	20.5	●		●
1 1/4"	0.63	15.9	0.87	22.0	●		●
1 1/2"	0.69	17.5	0.93	23.5	●		●
2"	0.75	19.0	1.00	25.4	●		●
2 1/2"	0.88	22.4	1.12	28.4	●		●
3"	0.94	23.9	1.26	31.9	●		●
4"	0.94	23.9	1.43	36.3	●		●
5"	0.94	23.9	1.56	39.6	●		●
6"	1.00	25.4	1.64	41.6	●		●
8"	1.12	28.5	1.81	46.0	●		●
10"	1.19	30.3	2.08	52.8	●		●
12"	1.25	31.8	2.20	55.8	●		●
14"	1.38	35.1	2.31	58.8	●		●
16"	1.44	36.6	2.49	63.2	●		●
18"	1.56	39.6	2.62	66.5	●		●
20"	1.69	43.0	2.74	69.5	●		●

**BAUM**

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## Elbows 30°



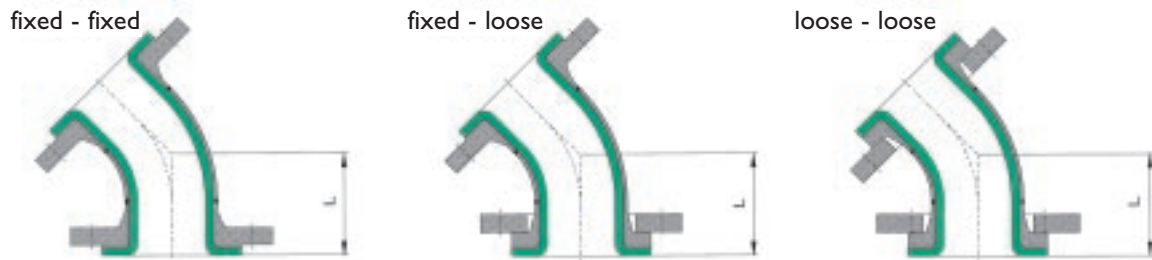
NPS	Class 150		Lining materials		
	L <sub>inch</sub>	L <sub>mm</sub>	PTFE		PP
1/2"	1.80	45	●		
3/4"	1.80	45	●		
1"	1.80	45	●		●
1 1/4"	2.00	51	●		
1 1/2"	2.20	57	●		●
2"	2.50	64	●		●
2 1/2"	3.00	76	●		
3"	3.00	76	●		●
4"	4.00	102	●		●
5"	4.50	114	●		
6"	5.00	127	●		●
8"	5.50	140	●		
10"	6.50	165	●		
12"	7.50	190	●		
14"	7.50	190	●		
16"	8.00	203	●		
18"	9.40	240	●		
20"	8.90	225	●		

Construction dimensions for Class 300 upon request.

The dimensions of elbows 30° are not defined in the ASME B16.5, they have been calculated following ASME B16.5.

Please determine the desired length when contacting our sales force.

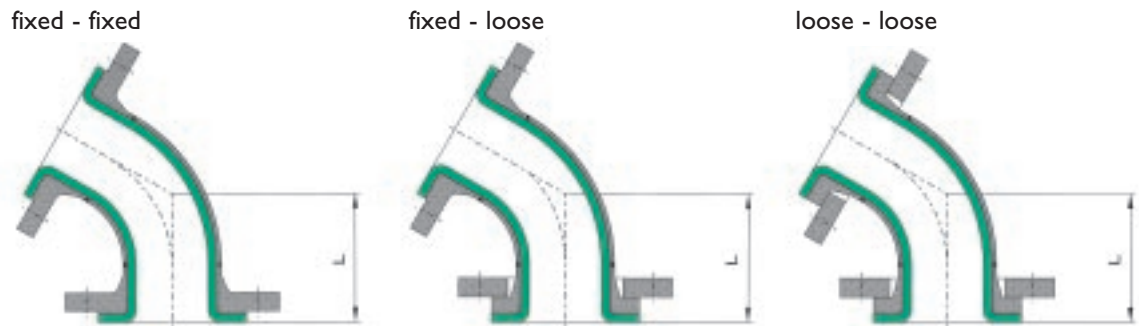
## Elbows 45°



NPS	Class 150		Class 300		Lining materials		
	L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE		PP
1/2"	---	---	---	---	●		
3/4"	---	---	---	---	●		
1"	1.75	45	2.25	57	●		●
1 1/4"	2.00	51	2.50	64	●		
1 1/2"	2.25	57	2.75	70	●		●
2"	2.50	64	3.00	76	●		●
2 1/2"	3.00	76	3.50	89	●		
3"	3.00	76	3.50	89	●		●
4"	4.00	102	4.50	114	●		●
5"	4.50	114	5.00	127	●		
6"	5.00	127	5.50	140	●		●
8"	5.50	140	6.00	152	●		
10"	6.50	165	7.00	178	●		
12"	7.50	191	8.00	203	●		
14"	7.50	191	8.50	216	●		
16"	8.00	203	9.50	241	●		
18"	8.50	216	10.00	254	●		
20"	9.50	241	10.50	267	●		

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

## Elbows 60°



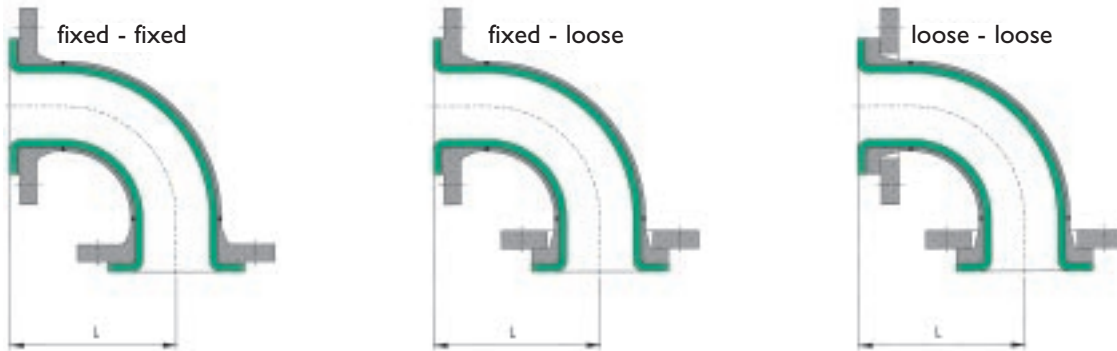
NPS	Class 150		Lining materials		
	L <sub>inch</sub>	L <sub>mm</sub>	PTFE		PP
1/2"	1.80	45	●		
3/4"	1.80	45	●		
1"	1.80	45	●		●
1 1/4"	2.00	51	●		
1 1/2"	2.20	57	●		●
2"	2.50	64	●		●
2 1/2"	3.00	76	●		
3"	3.00	76	●		●
4"	4.00	102	●		●
5"	4.50	114	●		
6"	5.00	127	●		●
8"	5.50	140	●		
10"	6.50	165	●		
12"	7.50	190	●		
14"	7.50	190	●		
16"	13.80	350	●		
18"	17.30	440	●		
20"	18.10	460	●		

Construction dimensions for Class 300 upon request.

The dimensions of elbows 60° are not defined in the ASME B16.5, they have been calculated following ASME B16.5.

Please determine the desired length when contacting our sales force.

## Elbows 90°

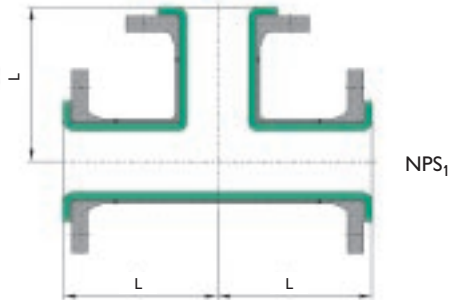


NPS	Class 150			Class 300			Form	Lining materials		
	L <sub>inch</sub>	L <sub>mm</sub>	Radius	L <sub>inch</sub>	L <sub>mm</sub>	Radius		PTFE		PP
1/2"	---	---	---	---	---	---	---	●		
3/4"	---	---	---	---	---	---	---	●		
1"	3.50	89	SR	4.00	102	SR	one-piece	●		●
1 1/4"	3.75	95	SR	4.25	108	SR	one-piece	●		
1 1/2"	4.00	102	SR	4.50	114	SR	one-piece	●		●
2"	4.50	114	SR	5.00	127	SR	one-piece	●		●
2 1/2"	5.00	127	SR	5.50	140	SR	one-piece	●		
3"	5.50	140	SR	6.00	152	SR	one-piece	●		●
4"	6.50	165	SR	7.00	178	SR	one-piece	●		●
5"	7.50	191	SR	8.00	203	SR	one-piece	●		
6"	8.00	203	SR	8.50	216	SR	one-piece	●		●
8"	9.00	229	SR	10.00	254	SR	one-piece	●		
10"	16.50	419	LR	16.50	419	LR	multi-part	●		
12"	19.00	483	LR	19.00	483	LR	multi-part	●		
14"	21.50	546	LR	21.50	546	LR	multi-part	●		
16"	24.00	610	LR	24.00	610	LR	multi-part	●		
18"	26.50	673	LR	26.50	673	LR	multi-part	●		
20"	29.00	737	LR	29.00	737	LR	multi-part	●		

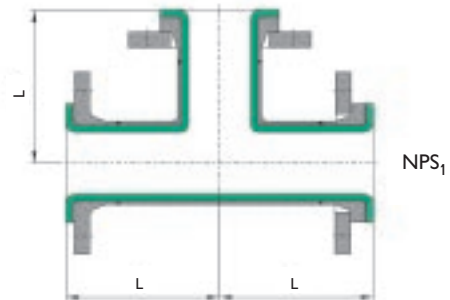
The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

## Tees

fixed - fixed - fixed NPS<sub>2</sub>



fixed - loose - loose NPS<sub>2</sub>



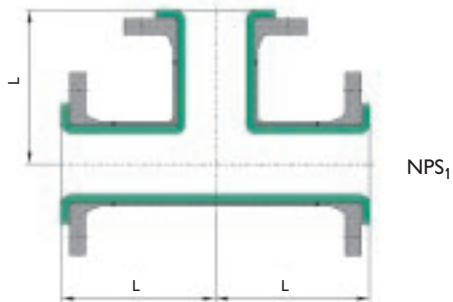
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
1/2"	1/2"	---	---	---	---		●	●
3/4"	3/4"	---	---	---	---		●	●
3/4"	1/2"	---	---	---	---		●	●
1"	1"	3.50	89	4.00	102		●	●
1"	3/4"	3.50	89	4.00	102		●	●
1"	1/2"	3.50	89	4.00	102		●	●
1 1/4"	1 1/4"	3.75	95	4.25	108		●	●
1 1/4"	1"	3.75	95	4.25	108		●	●
1 1/4"	3/4"	3.75	95	4.25	108		●	●
1 1/4"	1/2"	3.75	95	4.25	108		●	●
1 1/2"	1 1/2"	4.00	102	4.50	114		●	●
1 1/2"	1 1/4"	4.00	102	4.50	114		●	●
1 1/2"	1"	4.00	102	4.50	114		●	●
1 1/2"	3/4"	4.00	102	4.50	114		●	●
2"	2"	4.50	114	5.00	127		●	●
2"	1 1/2"	4.50	114	5.00	127		●	●
2"	1 1/4"	4.50	114	5.00	127		●	●
2"	1"	4.50	114	5.00	127		●	●

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

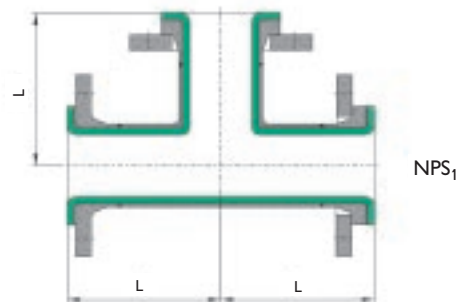
continued

# Tees

fixed - fixed - fixed NPS<sub>2</sub>



fixed - loose - loose NPS<sub>2</sub>



NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
2 1/2"	2 1/2"	5.00	127	5.50	140		●	●
2 1/2"	2"	5.00	127	5.50	140		●	●
2 1/2"	1 1/2"	5.00	127	5.50	140		●	●
2 1/2"	1 1/4"	5.00	127	5.50	140		●	●
2 1/2"	1"	5.00	127	5.50	140		●	●
3"	3"	5.50	140	6.00	152		●	●
3"	2 1/2"	5.50	140	6.00	152		●	●
3"	2"	5.50	140	6.00	152		●	●
3"	1 1/2"	5.50	140	6.00	152		●	●
3"	1"	5.50	140	6.00	152		●	●
4"	4"	6.50	165	7.00	178		●	●
4"	3"	6.50	165	7.00	178		●	●
4"	2 1/2"	6.50	165	7.00	178		●	●
4"	2"	6.50	165	7.00	178		●	●
4"	1"	6.50	165	7.00	178		●	●

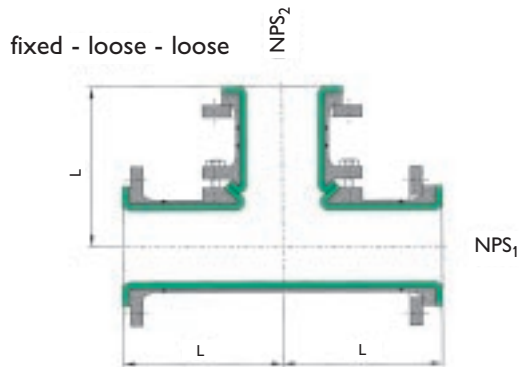
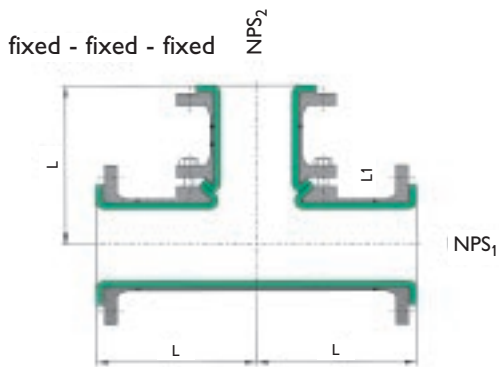
PFA-lined Tees are also available as **Lateral-Tees** upon request.

continued

**BAUM**



## Tees

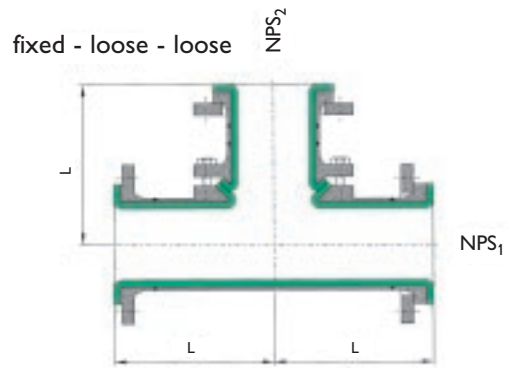
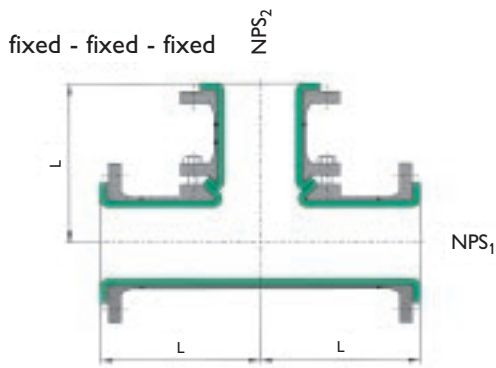


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
5"	5"	7.50	190	8.00	203	●	●	
5"	4"	7.50	190	8.00	203	●		
5"	3"	7.50	190	8.00	203	●		
5"	2"	7.50	190	8.00	203	●		
6"	6"	8.00	203	8.50	216	●		
6"	5"	8.00	203	8.50	216	●		
6"	4"	8.00	203	8.50	216	●		
6"	3"	8.00	203	8.50	216	●		
8"	8"	9.00	229	10.00	254	●		
8"	6"	9.00	229	10.00	254	●		
8"	5"	9.00	229	10.00	254	●		
8"	4"	9.00	229	10.00	254	●		
10"	10"	11.00	280	11.50	292	●		
10"	8"	11.00	279	11.50	292	●		
10"	6"	11.00	279	11.50	292	●		
10"	5"	11.00	279	11.50	292	●		

PFA-lined Tees are also available as **Lateral-Tees** upon request.

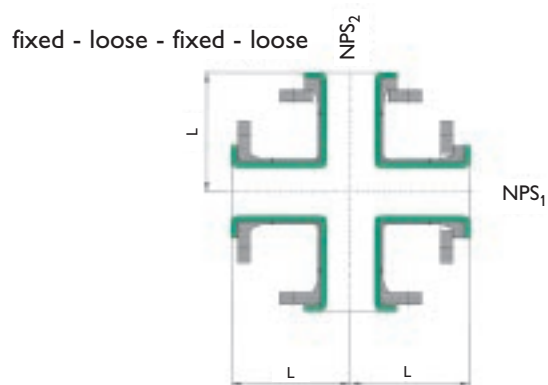
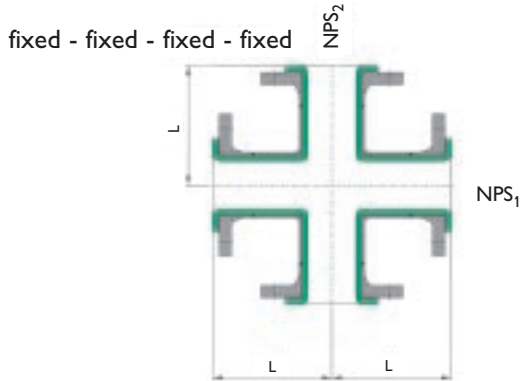
continued

# Tees



NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
12"	12"	12.00	305	13.00	330	●		
12"	10"	12.00	305	13.00	330	●		
12"	8"	12.00	305	13.00	330	●		
12"	6"	12.00	305	13.00	330	●		
14"	14"	14.00	356	15.00	381	●		
14"	12"	14.00	356	15.00	381	●		
14"	10"	14.00	356	15.00	381	●		
14"	8"	14.00	356	15.00	381	●		
16"	16"	15.00	381	16.50	419	●		
16"	14"	15.00	381	16.50	419	●		
16"	12"	15.00	381	16.50	419	●		
16"	10"	15.00	381	16.50	419	●		
18"	18"	16.50	419	18.00	457	●		
18"	16"	16.50	419	18.00	457	●		
18"	14"	16.50	419	18.00	457	●		
18"	12"	16.50	419	18.00	457	●		

## Crosses



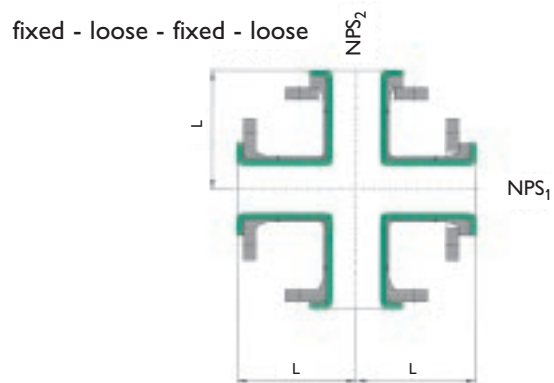
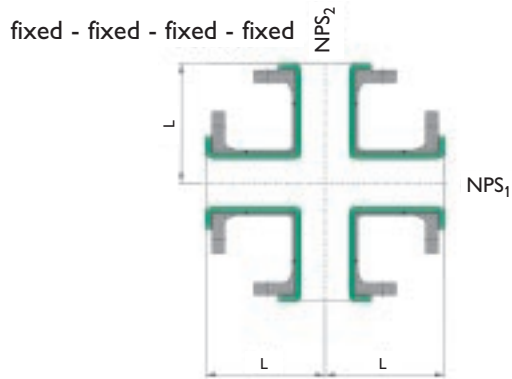
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
1/2"	1/2"	---	---	---	---		●	●
3/4"	3/4"	---	---	---	---		●	●
3/4"	1/2"	---	---	---	---		●	●
1"	1"	3.50	89	4.00	102		●	●
1"	3/4"	3.50	89	4.00	102		●	●
1"	1/2"	3.50	89	4.00	102		●	●
1 1/4"	1 1/4"	3.75	95	4.25	108		●	●
1 1/4"	1"	3.75	95	4.25	108		●	●
1 1/4"	3/4"	3.75	95	4.25	108		●	●
1 1/4"	1/2"	3.75	95	4.25	108		●	●
1 1/2"	1 1/2"	4.00	102	4.50	114		●	●
1 1/2"	1 1/4"	4.00	102	4.50	114		●	●
1 1/2"	1"	4.00	102	4.50	114		●	●
1 1/2"	3/4"	4.00	102	4.50	114		●	●
2"	2"	4.50	114	5.00	127		●	●
2"	1 1/2"	4.50	114	5.00	127		●	●
2"	1 1/4"	4.50	114	5.00	127		●	●
2"	1"	4.50	114	5.00	127		●	●
2 1/2"	2 1/2"	5.00	127	5.50	140		●	●
2 1/2"	2"	5.00	127	5.50	140		●	●
2 1/2"	1 1/2"	5.00	127	5.50	140		●	●
2 1/2"	1 1/4"	5.00	127	5.50	140		●	●
2 1/2"	1"	5.00	127	5.50	140		●	●

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

continued

**BAUM**

## Crosses

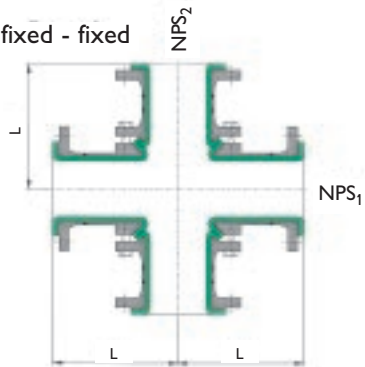


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
3"	3"	5.50	140	6.00	152		●	●
3"	2½"	5.50	140	6.00	152		●	●
3"	2"	5.50	140	6.00	152		●	●
3"	1½"	5.50	140	6.00	152		●	●
3"	1"	5.50	140	6.00	152		●	●
4"	4"	6.50	165	7.00	178		●	●
4"	3"	6.50	165	7.00	178		●	●
4"	2½"	6.50	165	7.00	178		●	●
4"	2"	6.50	165	7.00	178		●	●
4"	1"	6.50	165	7.00	178		●	●
5"	5"	7.50	190	8.00	203	●		
5"	4"	7.50	190	8.00	203	●		
5"	3"	7.50	190	8.00	203	●		
5"	2"	7.50	190	8.00	203	●		

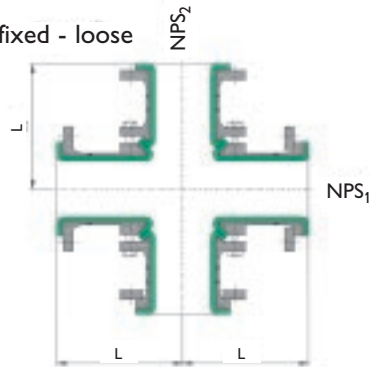
continued

## Crosses

fixed - fixed - fixed - fixed



fixed - loose - fixed - loose

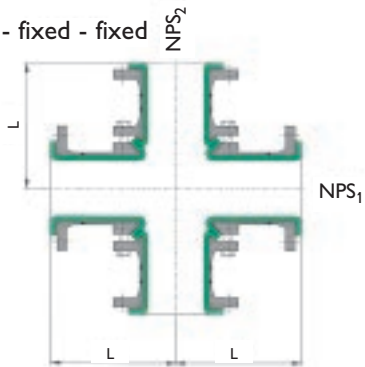


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
6"	6"	8.00	203	8.50	216	●		
6"	5"	8.00	203	8.50	216	●		
6"	4"	8.00	203	8.50	216	●		
6"	3"	8.00	203	8.50	216	●		
8"	8"	9.00	229	10.00	254	●		
8"	6"	9.00	229	10.00	254	●		
8"	5"	9.00	229	10.00	254	●		
8"	4"	9.00	229	10.00	254	●		
10"	10"	11.00	279	11.50	292	●		
10"	8"	11.00	279	11.50	292	●		
10"	6"	11.00	279	11.50	292	●		
10"	5"	11.00	279	11.50	292	●		
12"	12"	12.00	305	13.00	330	●		
12"	10"	12.00	305	13.00	330	●		
12"	8"	12.00	305	13.00	330	●		
12"	6"	12.00	305	13.00	330	●		

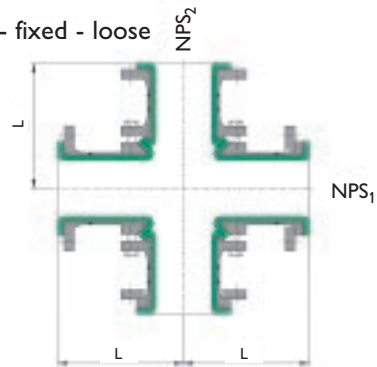
continued

## Crosses

fixed - fixed - fixed - fixed

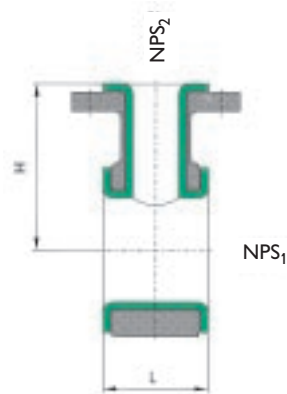


fixed - loose - fixed - loose



NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150		Class 300		Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	L <sub>inch</sub>	L <sub>mm</sub>	PTFE	PFA	PP
14"	14"	14.00	356	15.00	381	●		
14"	12"	14.00	356	15.00	381	●		
14"	10"	14.00	356	15.00	381	●		
14"	8"	14.00	356	15.00	381	●		
16"	16"	15.00	381	16.50	419	●		
16"	14"	15.00	381	16.50	419	●		
16"	12"	15.00	381	16.50	419	●		
16"	10"	15.00	381	16.50	419	●		
18"	18"	16.50	419	18.00	457	●		
18"	16"	16.50	419	18.00	457	●		
18"	14"	16.50	419	18.00	457	●		
18"	12"	16.50	419	18.00	457	●		

## Instrument-T



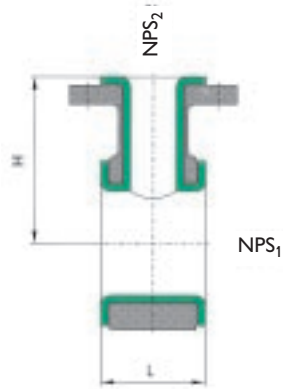
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150				Class 300				Lining material		
		L <sub>inch</sub>	H <sub>inch</sub>	L <sub>mm</sub>	H <sub>mm</sub>	L <sub>inch</sub>	H <sub>inch</sub>	L <sub>mm</sub>	H <sub>mm</sub>		PFA	PP
1"	1"	1.97	3.54	50	90	1.97	4.33	50	110		●	●
1"	3/4"	1.97	3.54	50	90	1.97	---	50	---		●	●
1"	1/2"	1.97	3.54	50	90	1.97	---	50	---		●	●
1 1/4"	1"	1.97	3.94	50	100	1.97	---	50	---		●	●
1 1/4"	3/4"	1.97	3.94	50	100	1.97	---	50	---		●	●
1 1/4"	1/2"	1.97	3.94	50	100	1.97	---	50	---		●	●
1 1/2"	1 1/2"	2.95	4.33	75	110	2.95	---	75	---		●	●
1 1/2"	1"	1.97	4.33	50	110	1.97	---	50	---		●	●
1 1/2"	3/4"	1.97	4.33	50	110	1.97	---	50	---		●	●
1 1/2"	1/2"	1.97	4.33	50	110	1.97	---	50	---		●	●
2"	2"	3.54	4.53	90	115	3.54	5.12	90	130		●	●
2"	1 1/2"	2.95	4.53	75	115	2.95	5.12	75	130		●	●
2"	1"	1.97	4.53	50	115	1.97	5.12	50	130		●	●
2"	3/4"	1.97	4.53	50	115	1.97	5.12	50	130		●	●
2"	1/2"	1.97	4.53	50	115	1.97	5.12	50	130		●	●
2 1/2"	2"	3.54	4.92	90	125	3.54	---	90	---		●	●
2 1/2"	1 1/2"	2.95	4.92	75	125	2.95	---	75	---		●	●
2 1/2"	1"	1.97	4.92	50	125	1.97	---	50	---		●	●
2 1/2"	3/4"	1.97	4.92	50	125	1.97	---	50	---		●	●
2 1/2"	1/2"	1.97	4.92	50	125	1.97	---	50	---		●	●
3"	2"	3.54	5.31	90	135	3.54	6.30	90	160		●	●
3"	1 1/2"	2.95	5.31	75	135	2.95	6.30	75	160		●	●
3"	1"	1.97	5.31	50	135	1.97	6.30	50	160		●	●
3"	3/4"	1.97	5.31	50	135	1.97	6.30	50	160		●	●
3"	1/2"	1.97	5.31	50	135	1.97	6.30	50	160		●	●

The dimensions of instrument-Tees are not defined in the ASME B16.5.

continued

**BAUM**

## Instrument-T

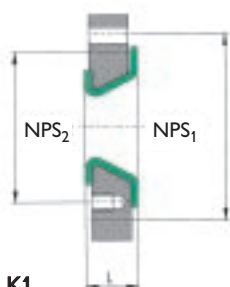


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150				Class 300				Lining material		
		L <sub>inch</sub>	H <sub>inch</sub>	L <sub>mm</sub>	H <sub>mm</sub>	L <sub>inch</sub>	H <sub>inch</sub>	L <sub>mm</sub>	H <sub>mm</sub>	PFA	PP	
4"	2"	3.54	5.91	90	150	3.54	6.69	90	170		●	●
4"	1 1/2"	2.95	5.91	75	150	2.95	6.69	75	170		●	●
4"	1"	1.97	5.91	50	150	1.97	6.69	50	170		●	●
4"	3/4"	1.97	5.91	50	150	1.97	6.69	50	170		●	●
4"	1/2"	1.97	5.91	50	150	1.97	6.69	50	170		●	●
5"	2"	3.54	6.3	90	160	3.54	---	90	---		●	●
5"	1 1/2"	2.95	6.3	75	160	2.95	---	75	---		●	●
5"	1"	1.97	6.3	50	160	1.97	---	50	---		●	●
5"	3/4"	1.97	6.3	50	160	1.97	---	50	---		●	●
5"	1/2"	1.97	6.3	50	160	1.97	---	50	---		●	●
6"	2"	3.54	7.09	90	180	3.54	8.07	90	205		●	●
6"	1 1/2"	2.95	7.09	75	180	2.95	8.07	75	205		●	●
6"	1"	1.97	7.09	50	180	1.97	8.07	50	205		●	●
6"	3/4"	1.97	7.09	50	180	1.97	8.07	50	205		●	●
6"	1/2"	1.97	7.09	50	180	1.97	8.07	50	205		●	●
8"	2"	3.54	8.27	90	210	3.54	9.45	90	240		●	●
8"	1 1/2"	2.95	8.27	75	210	2.95	9.45	75	240		●	●
8"	1"	1.97	8.27	50	210	1.97	9.45	50	240		●	●
8"	3/4"	1.97	8.27	50	210	1.97	9.45	50	240		●	●
8"	1/2"	1.97	8.27	50	210	1.97	9.45	50	240		●	●
10"	2"	3.54	9.45	90	240	3.54	12.80	90	325		●	●
10"	1 1/2"	2.95	9.45	75	240	2.95	12.80	75	325		●	●
10"	1"	1.97	9.45	50	240	1.97	12.80	50	325		●	●

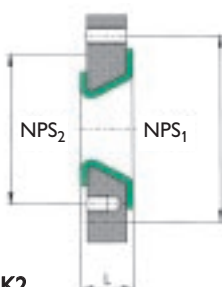
The dimensions of instrument-Tees are not defined in the ASME B16.5.



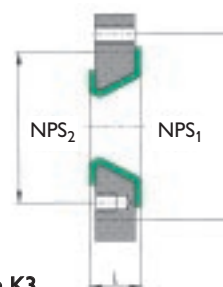
## Reducing-Flanges



**Form K1**  
Concentric  
NPS<sub>1</sub> through holes  
NPS<sub>2</sub> threaded holes



**Form K2**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes



**Form K3**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes on centre line

NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
3/4"	1/2"	1.38	35	C	●		●
1"	3/4"	1.38	35	C	●		●
1"	1/2"	1.38	35	C	●		●
1 1/4"	1"	1.38	35	C	●		●
1 1/4"	3/4"	1.38	35	C	●		●
1 1/2"	1 1/4"	1.38	35	C	●		●
1 1/2"	1"	1.38	35	C	●		●
1 1/2"	3/4"	1.38	35	B	●		●
2"	1 1/2"	1.38	35	C	●		●
2"	1 1/4"	1.38	35	C	●		●
2"	1"	1.38	35	B	●		●
2"	3/4"	1.38	35	B		●	●
2 1/2"	2"	1.38	35	C	●		●
2 1/2"	1 1/2"	1.38	35	C	●		●
2 1/2"	1 1/4"	1.38	35	B		●	●
2 1/2"	1"	1.38	35	B		●	●
2 1/2"	3/4"	1.38	35	B		●	●
3"	2 1/2"	1.38	35	B	●		●
3"	2"	1.38	35	B	●		●
3"	1 1/2"	1.38	35	B		●	●
3"	1 1/4"	1.38	35	B		●	●
3"	1"	1.38	35	A		●	●

Concentric reducing flanges **Class 300** and excentric reducing flanges upon request.

Please ask for technical details.

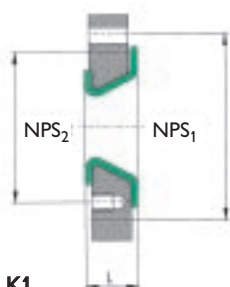
The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.

Please determine the desired length when contacting our sales force.

continued

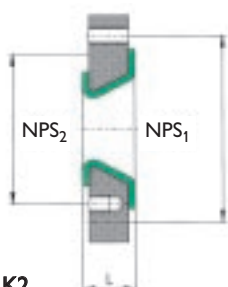
**BAUM**

## Reducing-Flanges



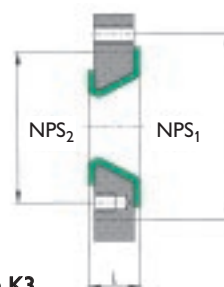
**Form K1**

Concentric  
NPS<sub>1</sub> through holes  
NPS<sub>2</sub> threaded holes



**Form K2**

Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes



**Form K3**

Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes on centre line

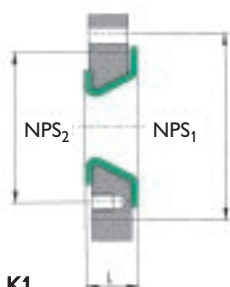
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
4"	3"	1.77	45	C	●		●
4"	2 1/2"	1.77	45	B	●		●
4"	2"	1.77	45	B	●		●
4"	1 1/2"	1.77	45	A		●	●
4"	1 1/4"	1.77	45	A		●	●
4"	1"	1.77	45	A		●	●
5"	4"	1.77	45	C	●		●
5"	3"	1.77	45	B	●		●
5"	2 1/2"	1.77	45	B		●	●
5"	2"	1.77	45	A		●	●
5"	1 1/2"	1.77	45	A		●	●
5"	1 1/4"	1.77	45	A		●	●
5"	1"	1.77	45	A		●	●
6"	5"	1.77	45	C	●		●
6"	4"	1.77	45	B	●		●
6"	3"	1.77	45	A		●	●
6"	2 1/2"	1.77	45	A		●	●
6"	2"	1.77	45	A		●	●
6"	1 1/2"	1.77	45	A		●	●
6"	1 1/4"	1.77	45	A		●	●
6"	1"	1.77	45	A		●	●

Concentric reducing flanges **Class 300** and excentric reducing flanges upon request.  
Please ask for technical details.

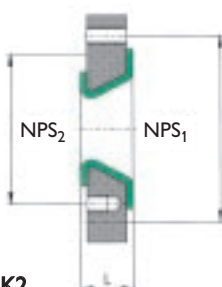
continued

**BAUM**

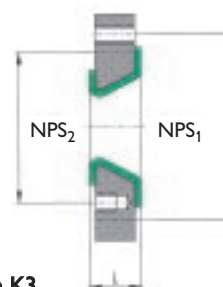
## Reducing-Flanges



**Form K1**  
Concentric  
NPS<sub>1</sub> through holes  
NPS<sub>2</sub> threaded holes



**Form K2**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes



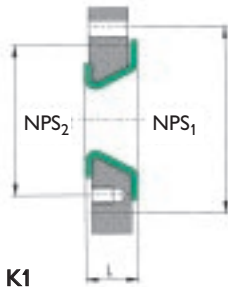
**Form K3**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes on centre line

NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
8"	6"	1.77	45	B	●		●
8"	5"	1.77	45	A	●		●
8"	4"	1.77	45	A		●	●
8"	3"	1.77	45	A		●	●
8"	2 1/2"	1.77	45	A		●	●
8"	2"	1.77	45	A		●	●
10"	8"	1.77	45	B	●		●
10"	6"	1.77	45	A	●		●
10"	5"	1.77	45	A	●		●
10"	4"	1.77	45	A		●	●
10"	3"	1.77	45	A		●	●
10"	2 1/2"	1.77	45	A		●	●
12"	10"	1.97	50	B	●		●
12"	8"	1.97	50	A	●		●
12"	6"	1.97	50	A	●		●
12"	5"	1.97	50	A	●		●
12"	4"	1.97	50	A	●		●
12"	3"	1.97	50	A	●		●

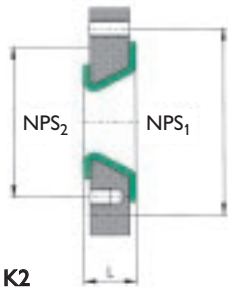
Concentric reducing flanges **Class 300** and excentric reducing flanges upon request.  
Please ask for technical details.

continued

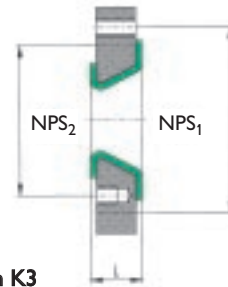
## Reducing-Flanges



**Form K1**  
Concentric  
NPS<sub>1</sub> through holes  
NPS<sub>2</sub> threaded holes



**Form K2**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes

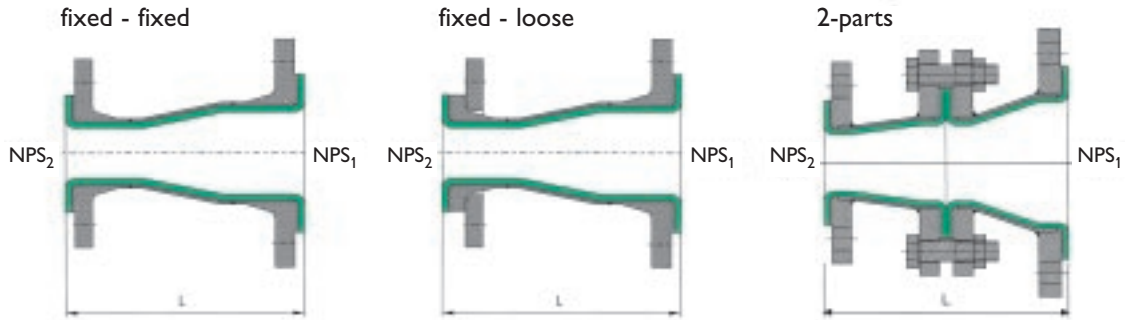


**Form K3**  
Concentric  
NPS<sub>1</sub> threaded holes  
NPS<sub>2</sub> threaded holes on centre line

NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
14"	12"	1.97	50	B	●		
14"	10"	1.97	50	A	●		
14"	8"	1.97	50	A	●		
14"	6"	1.97	50	A	●		
14"	5"	1.97	50	A	●		
14"	4"	1.97	50	A	●		
16"	14"	1.97	50	B	●		
16"	12"	1.97	50	A	●		
16"	10"	1.97	50	A	●		
16"	8"	1.97	50	A	●		
16"	6"	1.97	50	A	●		
16"	5"	1.97	50	A	●		
20"	16"	1.97	50	A	●		
20"	14"	1.97	50	A	●		
20"	12"	1.97	50	A	●		
20"	10"	1.97	50	A	●		
20"	8"	1.97	50	A	●		
20"	6"	1.97	50	A	●		

Concentric reducing flanges **Class 300** and excentric reducing flanges upon request.  
Please ask for technical details.

## Reducers concentric



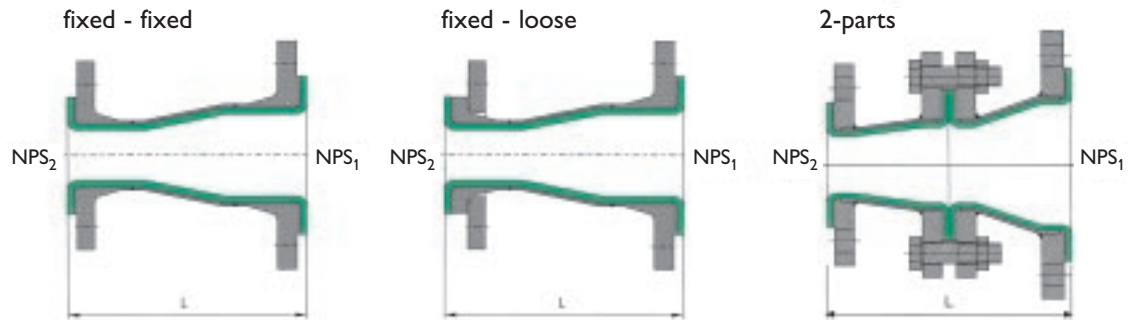
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150/300			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
3/4"	1/2"	4.49	114		●		●
1"	1/2"	4.49	114		●		●
1 1/4"	1"	4.49	114		●		●
1 1/4"	3/4"	4.49	114		●		●
1 1/2"	1 1/4"	4.49	114		●		●
1 1/2"	1"	4.49	114			●	●
1 1/2"	3/4"	4.49	114			●	●
2"	1 1/2"	5.00	127		●		●
2"	1 1/4"	5.00	127		●		●
2"	1"	5.00	127			●	●
2 1/2"	2"	5.51	140		●		●
2 1/2"	1 1/2"	5.51	140		●		●
2 1/2"	1 1/4"	5.51	140			●	●
3"	2 1/2"	5.98	152		●		●
3"	2"	5.98	152		●		●
3"	1 1/2"	5.98	152			●	●
3"	1"	5.98	152			●	●
4"	3"	7.01	178		●		●
4"	2 1/2"	7.01	178		●		●
4"	2"	7.01	178			●	●
5"	4"	7.99	203		●		●
5"	3"	7.99	203			●	●
5"	2 1/2"	7.99	203			●	●

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

continued

**BAUM**

## Reducers concentric

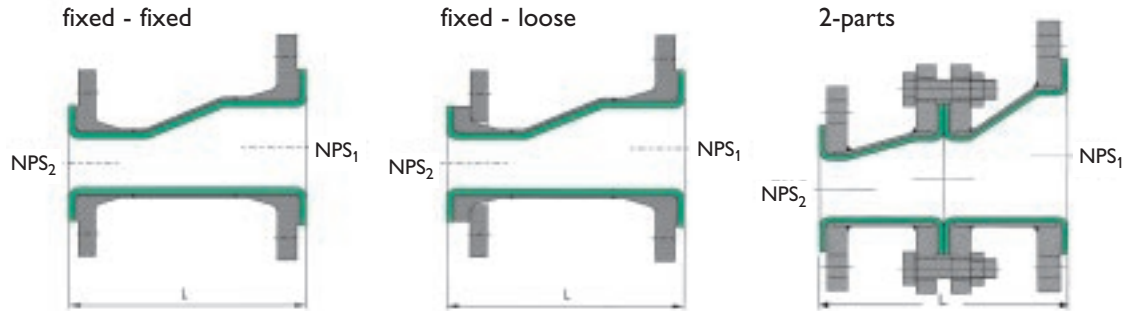


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150/300			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
6"	5"	9.02	229		●		●
6"	4"	9.02	229		●		●
6"	3"	9.02	229	2-parts	●		●
8"	6"	10.98	279		●		●
8"	5"	10.98	279	2-parts	●		●
8"	4"	10.98	279	2-parts	●		●
10"	8"	12.01	305		●		●
10"	6"	12.01	305	2-parts	●		●
10"	5"	12.01	305	2-parts	●		●
12"	10"	14.02	356		●		●
12"	8"	14.02	356	2-parts	●		●
12"	6"	14.02	356	2-parts	●		●
14"	12"	15.98	406		●		
14"	10"	15.98	406	2-parts	●		
14"	8"	15.98	406	2-parts	●		
16"	14"	17.99	457		●		
16"	12"	17.99	457	2-parts	●		
16"	10"	17.99	457	2-parts	●		
20"	16"	20.00	508		●		
20"	14"	20.00	508	2-parts	●		
20"	12"	20.00	508	2-parts	●		

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

**BAUM**

## Reducers excentric



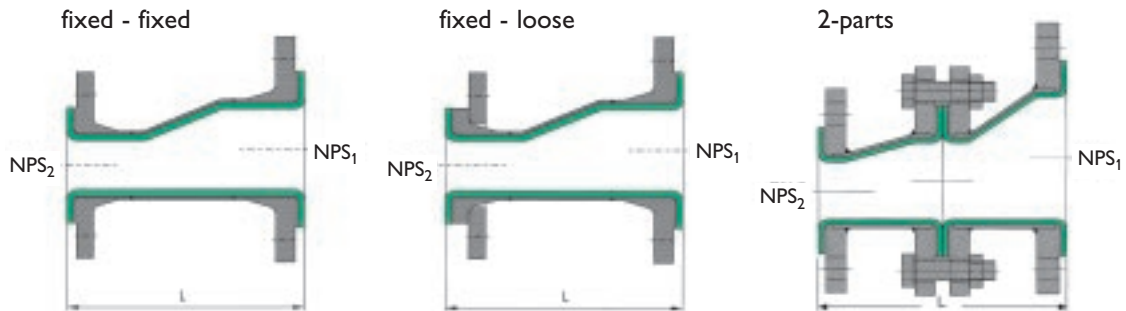
NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150/300		Form	Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>		PTFE	PFA	PP
3/4"	1/2"	4.49	114		●		●
1"	1/2"	4.49	114		●		●
1 1/4"	1"	4.49	114		●		●
1 1/4"	3/4"	4.49	114		●		●
1 1/2"	1 1/4"	4.49	114		●		●
1 1/2"	1"	4.49	114		●		●
1 1/2"	3/4"	4.49	114			●	●
2"	1 1/2"	5.00	127		●		●
2"	1 1/4"	5.00	127		●		●
2"	1"	5.00	127			●	●
2 1/2"	2"	5.51	140		●		●
2 1/2"	1 1/2"	5.51	140		●		●
2 1/2"	1 1/4"	5.51	140			●	●
3"	2 1/2"	5.98	152		●		●
3"	2"	5.98	152		●		●
3"	1 1/2"	5.98	152			●	●
3"	1"	5.98	152			●	●
4"	3"	7.01	178		●		●
4"	2 1/2"	7.01	178		●		●
4"	2"	7.01	178			●	●
5"	4"	7.99	203		●		●
5"	3"	7.99	203	2-parts	●		●
5"	2 1/2"	7.99	203	2-parts	●		●

The nominal pipe sizes 1/2" and 3/4" are not defined in the ASME B16.5.  
Please determine the desired length when contacting our sales force.

continued

**BAUM**

## Reducers excentric

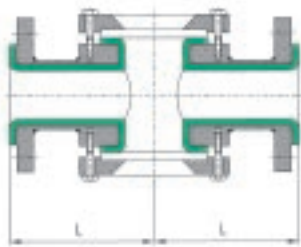


NPS <sub>1</sub>	NPS <sub>2</sub>	Class 150/300			Lining material		
		L <sub>inch</sub>	L <sub>mm</sub>	Form	PTFE	PFA	PP
6"	5"	9.02	229		●		●
6"	4"	9.02	229	2-parts	●		●
6"	3"	9.02	229	2-parts	●		●
8"	6"	10.98	279		●		●
8"	5"	10.98	279	2-parts	●		●
8"	4"	10.98	279	2-parts	●		●
10"	8"	12.01	305		●		●
10"	6"	12.01	305	2-parts	●		●
10"	5"	12.01	305	2-parts	●		●
12"	10"	14.02	356		●		●
12"	8"	14.02	356	2-parts	●		●
12"	6"	14.02	356	2-parts	●		●
14"	12"	15.98	406		●		
14"	10"	15.98	406	2-parts	●		
14"	8"	15.98	406	2-parts	●		
16"	14"	17.99	457		●		
16"	12"	17.99	457	2-parts	●		
16"	10"	17.99	457	2-parts	●		
20"	16"	20.00	508		●		
20"	14"	20.00	508	2-parts	●		
20"	12"	20.00	508	2-parts	●		

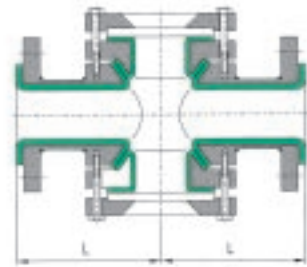


## Bull's Eye Sight Indicators (Class 150)

Form A

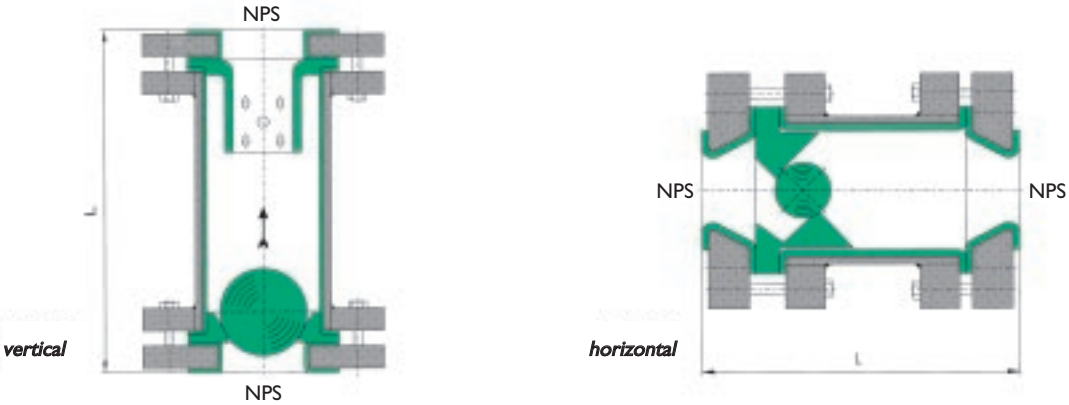


Form B



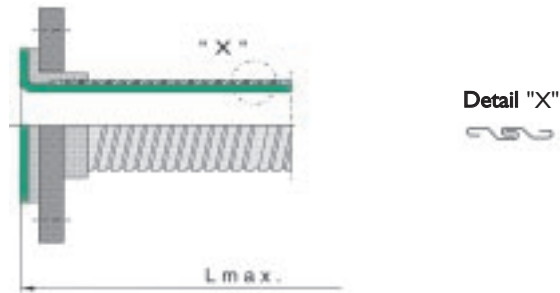
NPS	L mm	Form	Lining material		
			PTFE	PFA	
1"	89	A		●	
1 1/4"	95	A		●	
1 1/2"	102	A		●	
2"	114	A		●	
2 1/2"	127	A		●	
3"	140	A		●	
4"	165	A		●	
5"	190	B	●		
6"	203	B	●		
8"	229	B	●		
10"	280	B	●		
12"	305	B	●		
14"	356	B	●		
16"	381	B	●		

# Ball Check Valve (Class 150)



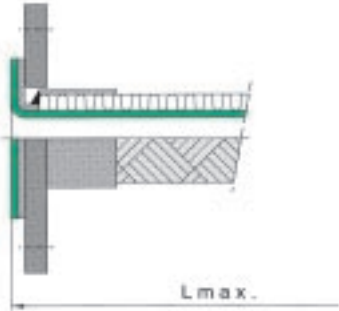
NPS	L mm	Lining material		
		PTFE		
1"	178	●		
1 1/4"	190	●		
1 1/2"	204	●		
2"	228	●		
2 1/2"	254	●		
3"	280	●		
4"	330	●		
5"	380	●		
6"	406	●		
8"	458	●		

## PTFE Chemical transfer hose-smooth bore with stripwound house (Class 150)



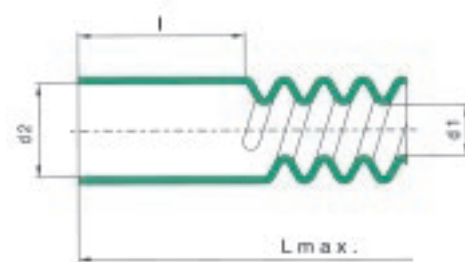
NPS	d mm	D mm	L <sub>max</sub> mm	Bend-radius min mm	Working-pressure max 10 <sup>5</sup> Pa
1/2"	13	19	5000	325	10
3/4"	20	23	5000	350	10
1"	25	28	5000	350	10
1 1/4"	32	35	5000	400	10
1 1/2"	41	45	5000	550	10
2"	50	55	5000	750	10
3"	82	87	5000	1300	10
4"	104	100	5000	1500	7,5

**PTFE Chemical transfer hose-smooth bore with annularly corrugating and wire braid (Class 150)**



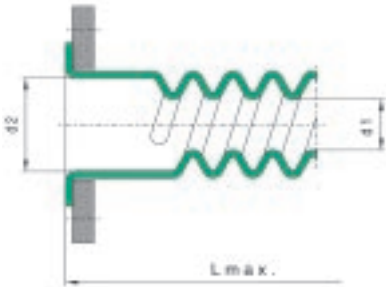
NPS	d mm	L <sub>max</sub> mm	Bend-radius min mm	Working-Pressure max 10 <sup>5</sup> Pa
1/2"	21	5000	350	25
1 1/4"	27	5000	400	20
1 1/2"	33	5000	550	16
2"	45	5000	750	16
2 1/2"	58	5000	1000	14
3"	73	5000	1300	12
4"	97	5000	1500	10
5"	120	5000	1800	10
6"	142	5000	2000	10
8"	192	5000	2500	10

## PTFE-Spiral Tubing (Class 150)



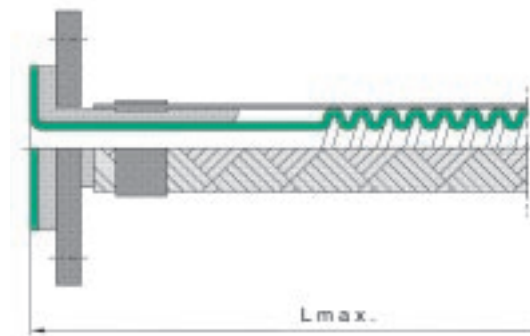
NPS	$d_1$ mm	$d_2$ mm	$l$ mm	$L_{max}$ mm	Bend-radius min mm	Working-pressure max $10^5$ Pa
1/2"	15	23	50	5000	60	1,5
3/4"	19	30	50	5000	60	1,5
1"	25	35	50	5000	80	1,5
1 1/2"	38	48	75	5000	110	1,25
2"	45	58	75	5000	210	1,25
3"	70	90	100	5000	400	1,25
4"	95	115	100	5000	550	1

# PTFE-Spiral Tubing with flange (Class 150)



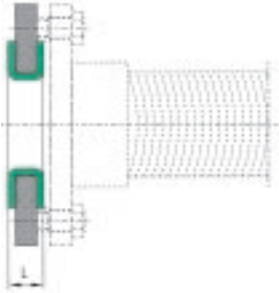
NPS	$d_1$ mm	$d_2$ mm	$L_{max}$ mm	Bend-radius min mm	Working-pressure max $10^5$ Pa
1/2"	15	23	5000	60	1,5
3/4"	19	30	5000	60	1,5
1"	25	35	5000	80	1,5
1 1/2"	38	48	5000	110	1,25
2"	45	58	5000	210	1,25
3"	70	90	5000	400	1,25
4"	95	115	5000	550	1

## PTFE Chemical transfer hose-spiral tube bore (Class 150)



NPS	d mm	L <sub>max</sub> mm	Bend-radius min mm	Working-pressure max 10 <sup>5</sup> Pa
1/2"	15	5000	60	10
3/4"	19	5000	60	10
1"	25	5000	80	10
1 1/2"	38	5000	110	10
2"	45	5000	210	10
3"	70	5000	400	5
4"	95	5000	550	5

# Auxiliary Flange (Class 150)



NPS	L mm	Form
1/2"	16	indicate type of hose
3/4"	16	
1"	19	
1 1/4"	19	
1 1/2"	19	
2"	20	
2 1/2"	20	
3"	22	
4"	22	

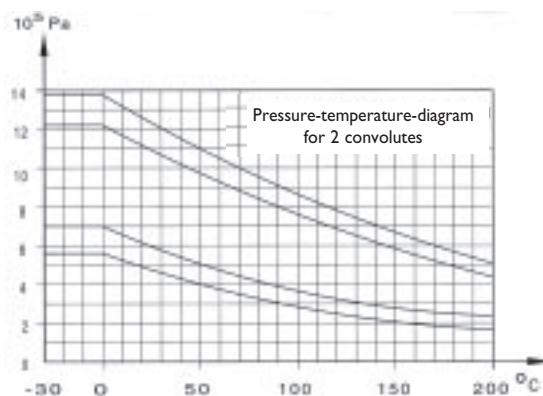


## PTFE-Expansion Joints, 2 Convolutes (Class 150)



NPS 1/2" - 4"  
NPS 5" - 6"

NPS 8"-10"  
NPS 12"-20"



NPS	L mm	Extension Compr. ± mm	Misalign- ment max. mm	Angular- Deflection max. °	Vacuum-Resistance			
					10 <sup>4</sup> Pa	max. °C	10 <sup>4</sup> Pa	max. °C
1/2"	28	4	2	7	0,1	200		
3/4"	28	4	2	7	0,1	200		
1"	35	6	3	7	0,1	200		
1 1/4"	35	6	3	7	0,1	200		
1 1/2"	35	6	3	7	0,1	200		
2"	40	6	3	7	0,1	200		
2 1/2"	57	9	5	7	0,1	200		
3"	57	9	5	7	0,1	200		
4"	67	13	6	7	0,1	200		
5"	83	13	6	7	0,1	150		
6"	75	13	6	7	0,1	150		
8"	102	13	6	7	0,1	50	2,0	150
10"	140	15	6	7	0,7	45	3,4	100
12"	150	20	10	7	1,5	45	6,7	100
14"	160	20	10	7	1,5	45	6,7	100
16"	178	25	10	7	1,5	45	6,7	100
18"	185	25	10	7	3,4	45	7,0	100
20"	230	25	10	7	8,0	100	8,7	100

The above shown chart is only valid at neutral length and with limit bolts in place.

Above mentioned types of travel (extension compression, misalignment or angular deflection) are alternatives; the percentage values must not exceed 100% when added together.

The figures stated are average values and apply to room temperature.

Important notice to the holes of the expansion joint flanges:

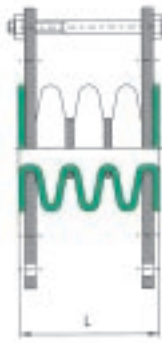
bolt circle: with threaded holes from 1/2" to 24"

other design: upon request

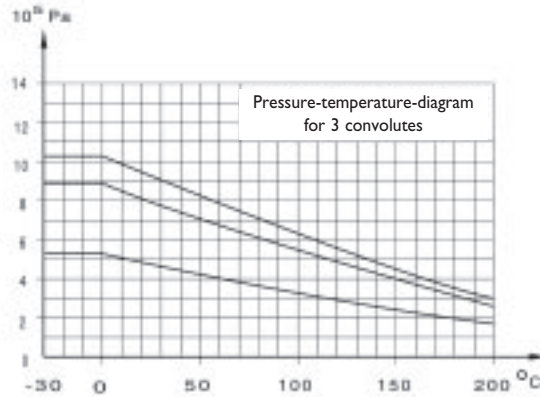
PTFE-Expansion Joints, 2 Convolutes (Class 300) upon request.

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## PTFE-Expansion Joints, 3 Convolute (Class 150)



NPS 1/2" - 4"  
NPS 5" - 6"  
NPS 8"-20"



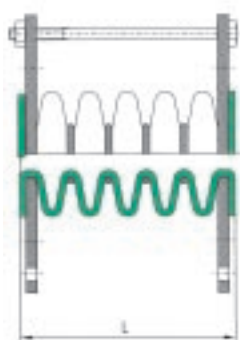
NPS	L mm	Extension Compr. ± mm	Misalign- ment max. mm	Angular- Deflection max. °	Vacuum-Resistance			
					10 <sup>4</sup> Pa	max. °C	10 <sup>4</sup> Pa	max. °C
1/2"	37	6	4	14	0,1	200		
3/4"	37	6	4	14	0,1	200		
1"	46	13	6	14	0,1	200		
1 1/4"	46	13	6	14	0,1	200		
1 1/2"	46	13	6	14	0,1	200		
2"	56	15	9	14	0,1	200		
2 1/2"	77	19	9	14	0,1	200		
3"	77	25	13	14	0,1	200		
4"	91	25	13	14	0,1	200		
5"	111	25	14	14	0,1	150		
6"	101	28	14	14	0,1	150		
8"	137	28	14	14	0,1	50	2,0	150
10"	200	30	14	14	0,7	45	3,4	100
12"	196	30	15	14	1,5	45	6,7	100
14"	215	32	18	14	1,5	45	6,7	100
16"	233	35	20	14	1,5	45	6,7	100
18"	280	30	20	14	3,4	45	7,0	100
20"	327	30	25	14			8,0	100

The above shown chart is only valid at neutral length and with limit bolts in place.  
Above mentioned types of travel (extension compression, misalignment or angular deflection) are alternatives;  
the percentage values must not exceed 100% when added together.  
The figures stated are average values and apply to room temperature.

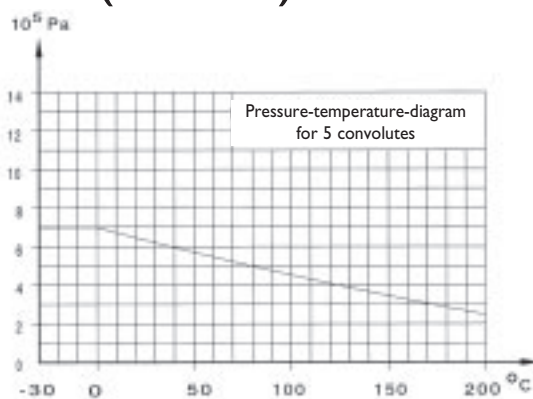
Important notice to the holes of the expansion joint flanges:  
bolt circle: with threaded holes from 1/2" to 24"  
other design: upon request  
PTFE-Expansion Joints, 3 Convolute (Class 300) upon request.

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## PTFE-Expansion Joints, 5 Convolutes (Class 150)



NPS 1/2" - 20"



NPS	L mm	Extension Compr. ± mm	Misalignment max. mm	Angular-Deflection max. °	Vacuum-Resistance
1/2"	55	8	5	20	<i>not recommended</i>
3/4"	55	8	5	20	
1"	68	8	12	20	
1 1/4"	68	8	12	20	
1 1/2"	80	13	12	20	
2"	88	19	12	20	
2 1/2"	113	25	13	20	
3"	113	25	16	20	
4"	139	25	16	20	
5"	167	32	16	20	
6"	153	32	16	20	
8"	207	32	16	20	
10"	300	32	16	20	
12"	288	35	18	20	
14"	325	35	18	20	
16"	343	40	25	20	
18"	470	40	25	20	
20"	520	40	25	20	

The above shown chart is only valid at neutral length and with limit bolts in place.

Above mentioned types of travel (extension compression, misalignment or angular deflection) are alternatives; the percentage values must not exceed 100% when added together.

The figures stated are average values and apply to room temperature.

Important notice to the holes of the expansion joint flanges:

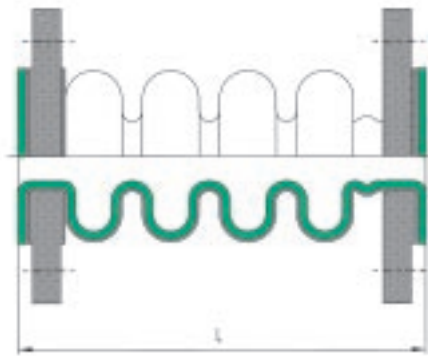
bolt circle: with threaded holes from 1/2" to 24"

other design: upon request

PTFE-Expansion Joints, 5 Convolutes (Class 300) upon request.

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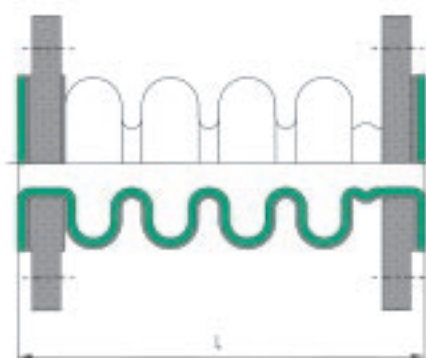
## PTFE-Lined Stainless Steel Expansion Joint (Class 150)



NPS	L mm	Extension Compr. ± mm	Spring rate N/mm	Vacuum-Resistance 10 <sup>5</sup> Pa at	
				23°C	160°C
1 1/4"	144	9	260	0.15	0.30
1 1/4"	218	18	130	0.15	0.30
1 1/2"	156	11	272	0.15	0.30
1 1/2"	240	22	136	0.15	0.30
2"	178	13	276	0.15	0.30
2"	291	27	195	0.15	0.30
2 1/2"	179	17	234	0.15	0.30
2 1/2"	282	32	173	0.15	0.30
3"	183	20	220	0.15	0.30
3"	271	35	178	0.15	0.30
4"	175	20	365	0.15	0.30
4"	259	40	183	0.15	0.30
5"	216	29	290	0.25	0.40
5"	353	50	290	0.25	0.40
6"	243	30	560	0.25	0.40
6"	378	60	280	0.25	0.40
8"	241	42	412	0.35	0.50
8"	408	78	335	0.35	0.50

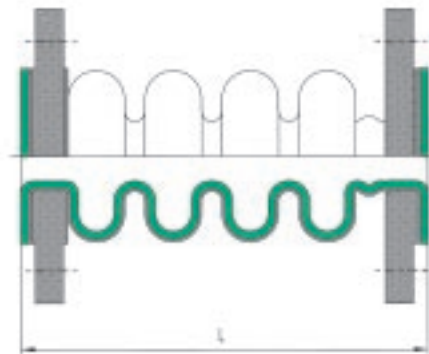
continued

## PTFE-Lined Stainless Steel Expansion Joint (Class 150)



NPS	L mm	Extension Compr. ± mm	Spring rate N/mm	Vacuum-Resistance 10 <sup>5</sup> Pa at	
				23°C	160°C
10"	237	44	525	0.40	0.60
10"	381	81	269	0.40	0.60
12"	280	55	480	0.50	0.75
12"	416	95	352	0.50	0.75
14"	289	60	460	0.50	0.75
14"	396	92	378	0.50	0.75
16"	283	52	713	0.70	0.90
16"	421	104	357	0.70	0.90
18"	320	70	548	0.70	0.90
18"	517	130	430	0.70	0.90
20"	303	56	955	<i>not recommended</i>	
20"	493	126	425		
24"	324	70	548		
24"	464	126	305		

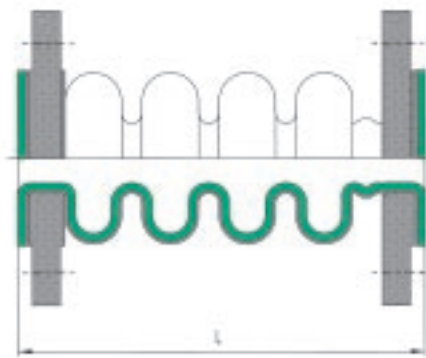
## PTFE-Lined Stainless Steel Expansion Joint (Class 300)



NPS	L mm	Extension Compr. ± mm	Spring rate N/mm	Vacuum-Resistance 10 <sup>5</sup> Pa at	
				23°C	160°C
1 1/4"	140	8	428	0.3	0.3
1 1/4"	200	15	238	0.3	0.3
1 1/2"	155	10	428	0.3	0.3
1 1/2"	255	17	354	0.3	0.3
2"	193	15	357	0.3	0.3
2"	300	24	390	0.3	0.3
2 1/2"	189	14	660	0.3	0.3
2 1/2"	273	26	367	0.3	0.3
3"	203	16	740	0.3	0.3
3"	295	29	412	0.3	0.3
4"	208	21	616	0.3	0.3
4"	314	35	523	0.3	0.3
5"	206	20	725	0.4	0.4
5"	284	35	415	0.4	0.4
6"	246	26	890	0.4	0.4
6"	358	47	495	0.4	0.4
8"	229	30	850	0.5	0.5
8"	316	52	486	0.5	0.5

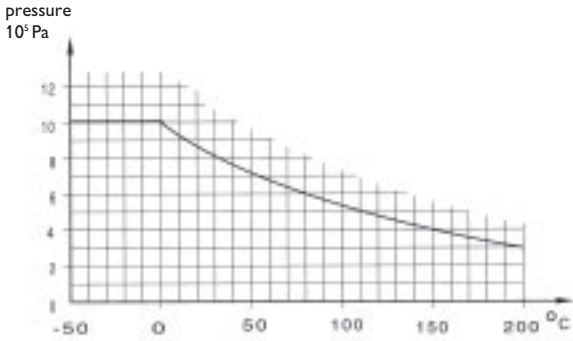
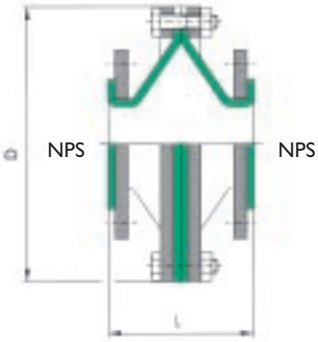
continued

## PTFE-Lined Stainless Steel Expansion Joint (Class 300)



NPS	L mm	Extension Compr. ± mm	Spring rate N/mm	Vacuum-Resistance 10 <sup>5</sup> Pa at	
				23°C	160°C
10"	258	35	975	0.6	0.6
10"	354	61	558	0.6	0.6
12"	281	40	1188	0.75	0.75
12"	389	70	679	0.75	0.75
14"	293	42	1190	0.75	0.75
14"	404	73	680	0.75	0.75
16"	316	44	1605	0.9	0.9
16"	476	88	803	0.9	0.9
18"	365	50	1500	0.9	0.9
18"	529	90	834	0.9	0.9
20"	328	48	1673	<i>not recommended</i>	
20"	496	96	837		
24"	328	48	1675		
24"	492	96	838		

# PTFE-Vacuum Expansion Joint (Class 150)

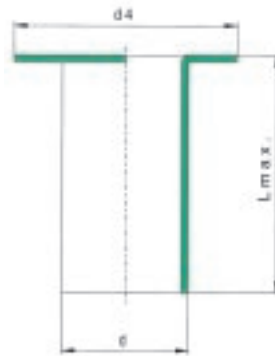


NPS	L mm	Extension Compr. ± mm	D mm
4"	95	10	285
6"	100	15	350
8"	105	15	410
10"	110	18	465
12"	115	18	520
14"	120	18	590
16"	135	20	670
18"	150	20	695
20"	150	20	770

PTFE-Vacuum Expansion Joints (Class 300) upon request.

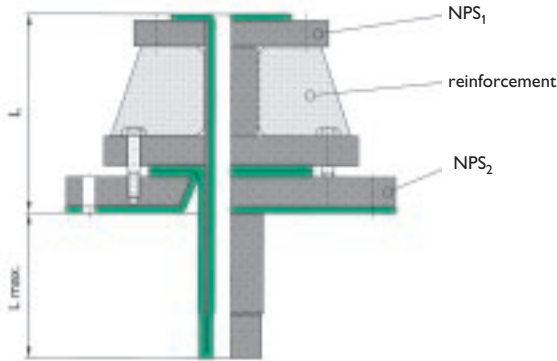


## PTFE-Nozzle Liner



NPS	L <sub>max</sub> mm	d mm	d <sub>4</sub> mm	Lining material		
				PTFE		
1/2"	6000	indicate when ordering	35	●		
3/4"	6000		43	●		
1"	6000		51	●		
1 1/4"	6000		64	●		
1 1/2"	6000		73	●		
2"	6000		92	●		
2 1/2"	6000		105	●		
3"	6000		127	●		
4"	6000		158	●		
5"	6000		186	●		
6"	6000		216	●		
8"	6000		270	●		
10"	3000		324	●		
12"	3000		381	●		
14"	3000		412	●		
16"	3000		470	●		
20"	3000		585	●		

# PTFE-Lined Dip Pipe (Class 150)



NPS <sub>1</sub>	NPS <sub>2</sub>	L mm	L <sub>max</sub> mm	Lining-Materials		
				PTFE		
1/2"	please indicate when ordering	150	5000	●		
3/4"		150	5000	●		
1"		150	5000	●		
1 1/4"		150	5000	●		
1 1/2"		150	5000	●		
2"		150	5000	●		
2 1/2"		150	5000	●		
3"		150	5000	●		
4"		150	4000	●		
5"		150	4000	●		
6"		150	4000	●		
8"		150	4000	●		
10"		150	3000	●		
12"		150	3000	●		

Also available seamless depending on technical feasibility.  
 PTFE-Lined Dip Pipes (Class 300) upon request.

## 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.

Your notes

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