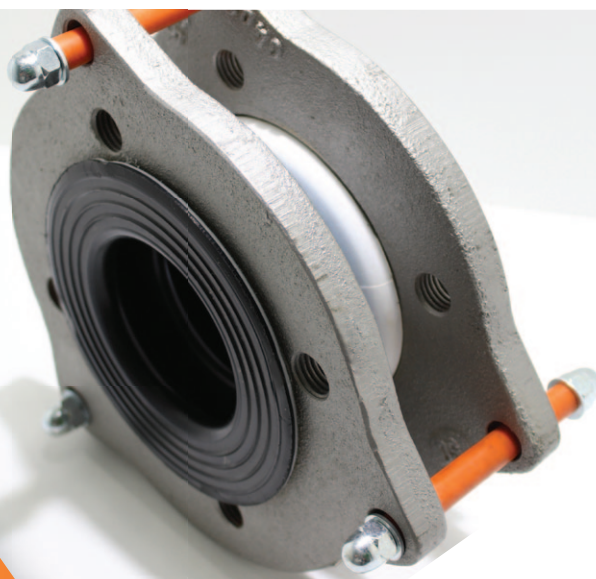




Vanéflex® Expansion Joints

Maintenance and down-time in various industries are unwelcome due to significant amount of wasted capital. Vanéflex® multi-laminated PTFE expansion joints are designed for **corrosive applications** in industries such as pulp and paper, (petro-) chemical and foundries. Our material and production expertise guarantees **long-lasting equipment** for these demanding industry environments, leading to a low total cost of ownership. The in-house manufactured expansion joints offer minimal permeability, high resistance to stress-cracking and to most chemicals.

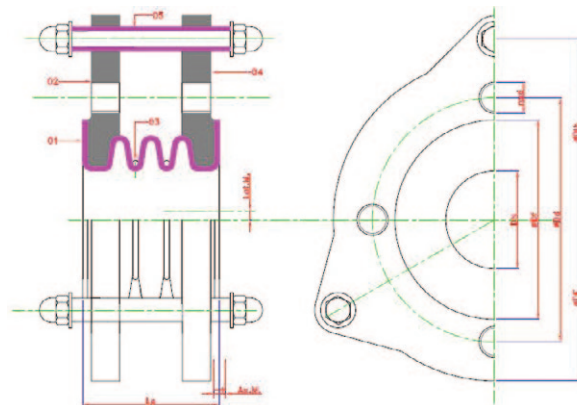
Vanéflon — High
Performance Plastics.
High Performance
Solutions.



- Low Cost Of Ownership
- Multi-laminated PTFE bellow
- Flanges in common materials acc. to DIN and ANSI. (others on request)
- Minimal permeability
- highly resistant to stress-cracking
- Wide temperature range up to 235°C
- Pressure resistant up to 16bars
- High vacuum resistance
- Excellent chemical resistance
- Certificates (3.1, PED 97/23/EC Module H, FDA)

PTFE | TFM® | PFA | PCTFE | FEP | ETFE
PEEK | PPS | PI (Vespel®) | PEI | PEKK
PVDF | PA | POM | PP | UHMPE





Vanéflex® Bill Of Materials

Type: R-LD / R / R-HD	Ax.M.: Axial movement
DN: Nominal Diameter	Lat.M.: Lateral movement
ØDF: Outside diameter raised face**	Ang.M: Angular Movement
ØDd: Pitch circle diameter attachment rods	01: PTFE bellow
ØDF: Outside diameter flange	02: Threaded holes acc. DIN/ANSI
ØDlb: Pitch circle Tie Rods	03: Root Rings
Nxd: number and size attachment bolts	04: Flanges
LO: neutral length	05: Tie Rods + bushing

** For GGG40.3 flanges only

NW	Outside diameter flange	Pitch circle attachment bolts	Outside diameter raised face	Pitch circle tie rods	Outside diameter flange incl ears	Number and size attachment bolts DIN	Number and size attachment bolts ASA	Diameter tie rod holes	Number of tie rods
DIN/ASA	ØDF	ØDd	ØDf	ØDlb		Nxd			
25/1"	115	85/79	68	135	165	4 x M12	4 x BSW ^{1/2"}	13	3
32/1 ^{1/4"}	140	100/89	78	160	185	4 x M16	4 x BSW ^{1/2"}	13	3
40/1 ^{1/2"}	150	110/98	88	170	195	4 x M16	4 x BSW ^{1/2"}	13	3
50/2"	165	125/121	102	185	210	4 x M16	4 x BSW ^{5/8"}	13	3
65/2 ^{1/2"}	185	145/140	122	205	230	4 x M16	4 x BSW ^{5/8"}	13	3
80/3"	200	160/152	138	220	250	8 x M16	4 x BSW ^{5/8"}	15	3
100/4"	220/230	180/190	158/157	240	270	8 x M16	8 x BSW ^{5/8"}	15	3
125/5"	250	210/216	188	280	310	8 x M16	8 x BSW ^{3/4"}	15	3
150/6"	285	240/241	212	315	345	8 x M20	8 x BSW ^{3/4"}	15	3
200/8"	340	295/298	268	370	400	8 x M20	8 x BSW ^{3/4"}	17	3
250/10"	395/406	350/362	320/324	430/440	460	12 x M20	12 x BSW ^{7/8"}	17	3
300/12"	445/483	400/432	370/381	480/518	520	12 x M20	12 x BSW ^{7/8"}	17	3
350/14"	505/533	460/476	430/413	545/573	585	16 x M20	12 x BSW ^{1"}	20	3
400/16"	565/597	515/540	482/470	605/642	650	16 x M24	16 x BSW ^{1"}	23	4
450/18"	615/635	565/578	533	657/680	700	20 x M24	16 x BSW ^{1^{1/8"}}	23	4
500/20"	670/699	620/635	585/584	710/744	785	20 x M24	20 x BSW ^{1^{1/8"}}	23	4
600/24"	780/813	725/749	685/692	820/858	900	20 x M27	20 x BSW ^{1^{1/4"}}	23	4

Dimensional details

Vanéflex® R

Nd	Installation length - R			Ax. Mov.+/-Conv.	Lat. Mov.+/-Conv.	Ang.Misal./Conv.
	2 Conv.	3 Conv.	+/- Conv.	R		
25	45	55	12	4,5	3	6,5
32	55	65	13	4,5	3	6
40	55	70	15	5	3,5	6
50	60	70	16	5	3,5	5,5
65	60	80	20	5,5	4	5
80	65	90	24	5,5	4	5
100	70	95	25	6	4,5	4,5
125	75	100	25	6,5	4,5	4
150	75	105	25	7	4,5	3,5
200	80	110	25	7,5	5	3
250	90	120	26	8	5	3
300	95	125	26	8	5	2,5
350	100	125	26	8,5	5	2,5
400	100	135	26	8,5	5	2
450	100	135	26	8,5	5	2
500	105	140	26	9	5,5	2
600	105	140	26	9	5,5	1,5

Vanéflex® R-HD

Nd	Installation length - R-HD			Ax. Mov.+/-Conv.	Lat. Mov.+/-Conv.	Ang.Misal./Conv.
	2 Conv.	3 Conv.	+/- Conv.	R-HD		
25	45	55	12	3	2	4,5
32	55	65	13	3	2	4
40	55	70	15	3,5	2,5	4
50	60	70	16	3,5	2,5	3,5
65	60	80	20	4	3	3,5
80	65	90	24	4	3	3,5
100	70	95	25	4,5	3	3
125	75	100	25	4,5	3	3
150	75	105	25	5	3	2,5
200	80	110	25	5	3,5	2,5
250	90	120	26	5,5	3,5	2
300	95	125	26	5,5	3,5	2
350	100	125	26	6	3,5	1,5
400	100	135	26	6	3,5	1,5
450	100	135	26	6	3,5	1,5
500	105	140	26	6,5	4	1,5
600	105	140	26	6,5	4	1



Flanges

Standard flanges are available in compliance to the international piping standards ASME Class 150/300 and DIN PN 10/16. Special flanges on request.

The flanges are carefully machined and an internal flange profiling is provided. This enables an optimal placement of the first and last convolution of the PTFE bellow in both flanges. The risk for cracks in the bellow is therefore nearly non-existent.

Flanges are available in the following materials:

- GGG 40.3 - 0.7043 * (standard)
- St 52.3 - 1.0570 *
- SS 304 - 1.4301
- SS 316 - 1.4401
- SS 316 L - 1.4404
- SS 316 Ti - 1.4571
- Customized

* coated with a zinc primer and PU-SS powder coating.

Support flanges

For expansion joints with more than 3 convolutions one or more support flanges may be necessary. Support flanges prevent the collapsing of convolutions when the piping system experiences strong vibrations or pressure waves.

PTFE Convolutions

The number of convolutions is key to the range of movement provided by the bellows. However both pressure and vacuum performance are reduced as the number of convolutions increases. For the Vanéflex® PTFE expansion joints, the number of convolutions ranges from 2 up to 10 convolutions from DN25 to DN900

Root Rings

Root rings (reinforcement O-rings) provide extra support for the PTFE material to mechanically ensure dimensional stability, especially when hot. They are installed externally at the base of each convolution.

The root rings are available in:

- SS 304 (standard)
- Monel 400
- Hastelloy C4

Tie Rods

Tie rods prevent the bellows from exceeding their allowed maximum movement. They leave our plant factory set at the permitted maximum extension as detailed on the tag plate. Standard material for the tie rods is Carbon Steel with a Poly Ethylene (Orange) bushing.

Vanéflex®...

benefit from the properties:

- Low Cost Of Ownership
- Highly resistant to a great number of reactive chemicals.
- UV-resistant
- Withstands temperatures up to 235°C and high pressures.

expansion joints for every application

- Type R-LD for high flexibility (no vacuum)
- Type R for general pressure duty (and vacuum)
- Type R-H for high pressure duty (and deep vacuum)

Sizes range from DN25 to DN600, bigger expansion joints on request.

Bellow Material

In its standard design the bellow is made from prime multi-laminated virgin PTFE material. This lamination reduces the material's permeability to an absolute minimum and allows for an exceptional resistance to stress-cracking.

In extruded PTFE bellows plasticizers are most likely present in the material. A crack will keep on growing, while this is not the case in the multi-layered PTFE bellows. Wherever a crack manifests itself in the bellow material, the natural barriers of the multi-layered design limit its growth.

The PTFE bellow comes in a variety of materials:

- Prime multi-laminated virgin PTFE
- PTFE-antistatic (black)
- PTFE-antistatic FDA approved (white)

Vanéflex® antistatic bellows offer excellent low-permeability properties because of their laminated design. The laminated antistatic inner part is finished with laminated virgin PTFE to form a complex of virgin PTFE and antistatic PTFE.

Limit Sleeves

Limit sleeves prevent damage to the convolutions by preventing the bellows from being compressed below the permitted minimum axial length. If the bellows are applied in application which involve the handling of media at high velocities or with entrained solids using PTFE sleeves is advised.

The limit sleeves provide additional protection to the bellow's convolutions. They are tight fitted to minimise the potential built up of solids in the convolutions.

Certifications

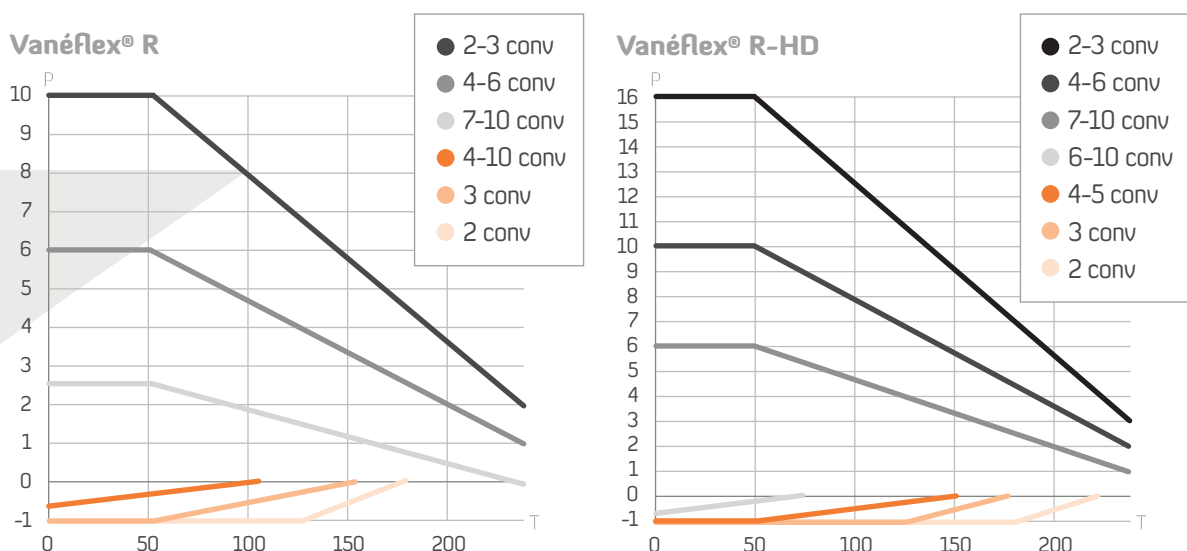
Vanéflon is certified according to ISO 9001 for their quality management, and according to PED 97/23/EC Module H for full quality assurance.

Additional certification is possible upon request.:

- TÜV
- FDA
- 3.1 | 3.2 | 2.1 | 2.2

Pressure (Barg) – temperature (°C) specifications:

The following diagrams show the correlation between pressure and temperature and how they are influenced by the number of convolutions in the three versions of Vanéflex® expansion joints.





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PTFE Expansion Joints

PTFE expansion joints are essential in most piping systems demanding high resistance to chemicals and temperatures. They are designed to absorb and compensate for heat-induced expansion and contraction thus protecting the pipes and any sensitive equipment attached.

The expansion joint's ability to absorb movement is determined by the number of convolutions and the thickness of the PTFE bellow. The higher the number of convolutions, the higher the ability to absorb movements but the lower its pressure resistance. Their ability to withstand pressure also depends on the wall thickness of the PTFE bellow. The thicker this wall the more pressure the expansion joint can withstand.

Vanéflex® Expansion Joints

Vanéflon has more than 35 years of experience in manufacturing PTFE expansion joints. Our Vanéflex® PTFE expansion joints are made from in-house produced semi-finished parts using prime raw virgin PTFE material. The finished multi-laminated PTFE bellows and other components are under constant control to ensure superior quality. The applied thoroughness guarantees the quality, reliability and durability of our products.



Vanéflon

Since 1976 Vanéflon produces high performance plastic semi-finished and machined parts. As a specialist in compression and hot-moulding in combination with high precision machining we offer tailor-made solutions for a wide range of industries. Our flexible, experienced and dedicated team stands in for customized material selection, engineering support and production thus guaranteeing consistent quality on every level. Modern machinery and continuous process optimization assure the cost-efficient execution of the most demanding tasks. Vanéflon's in-house expertise and high standards lead to reliable, flexible and cost-efficient solutions for demanding customers, who expect professional support, high quality products, fast response and short lead-times. Vanéflon is certified to ISO 9001 and offers various material certifications.