WILLBRANDT **Rubber Expansion Joint Type 39**

■ not in stock

DN 50 - DN 1000

The Type 39 is a handmade, low corrugated rubber expansion joint. Its low corrugated shape minimises flow resistance. It is characterised by its flexibility in length and the wide variety of rubber qualities, so that a suitable rubber compound is available for every application (see material descriptions on the following page).

Type 39 is mainly used in plant construction and in water and wastewater technology. Here it is used especially for repairs when the gap does not correspond to a standard installation length, which means that expensive conversion work on the pipe system can be avoided. It absorbs movements and vibrations and has a noise-damping effect.

Bellow design	Low corrugated rubber bellow with reinforcement and shaped sealing bead with core ring, self-sealing (no additional seals required). Suitable for swiveling flanges.
Flange version	Both sides with swiveling flange made of galvanized steel, drilled according to DIN PN 10 (standard). Other materials and dimensions are possible.
Pressure resistance	Design according to customer requirements, max. 10 bar operating pressure (for higher pressures up to max. 16 bar the feasibility must be checked)
Vacuum resistance	With appropriate design vacuum-proof.
Approvals/conformity	CE (A2), FDA and EG 1935/2004 conform (detailed overview on page 5)
Accessories	- Tie rods - Vacuum supporting spiral/rings - Guide sleeves - PTFE lining (see type 39 PTFE on page 12) - Potential equalisation - Flame-resistant protective covers - Dust and splash protection covers - Earth cover / sun protection cover Further information on page 99 - 105.

Specifications

Bellow*		Bellow design*			Permissible operating data									
Colour code	Colour marking	Core (inner)	Reinforce-ment	Cover (outer)	Max. temperature °C	°C	bar	°C	bar	°C	bar	°C	bar	°C	bar
red	■	EPDM	Polyamide	EPDM	100										
yellow	■	NBR	Polyamide	NBR	90										
green	■	CSM	Polyamide	CSM	100										
grey	■	CR	Polyamide	CR	90	Expansion joints will designed according to your operating parameters.									
red-white	■□	EPDM light	Polyamide	EPDM	100										
yellow-white	■□	NBR light	Polyamide	NBR	90										
lilac	■	FPM	Aramid	FPM	200										
-		Silicone	Aramid	Silicone	200										

* Other rubber compounds/reinforcements on request.

Important information

For aggressive media, please have the material resistance checked by our engineers.
The bellows must not be painted or insulated at media temperatures >50 °C. Please also note the planning instructions and the tolerances according to the FSA manual (page 117) in the technical appendix!

WILLBRANDT **Rubber Expansion Joint Type 39**

Application

Type 39 red (EPDM)
For water, sea water, cooling water with glycol or other chemical additives for treating water, saline solutions, weak acids and weak alkalis. Unsuitable for aliphatic, aromatic and chlorinated hydrocarbons, oil or oily media.

Type 39 yellow (NBR)
For oils, fats, gases, diesel fuels, kerosene and crude oil.
Not suitable for aromatic and chlorinated hydrocarbons, esters and ketones.

Type 39 green (CSM)
For chemicals, aggressive, chemical waste water and compressor air containing oil.

Type 39 grey (CR)
For water, waste water, swimming pool water, salt water, cooling water with anti-corrosive products containing oil, oil mixtures and compressed air containing oil.

Type 39 red-white (EPDM light)
Like type 39 red, but with light-coloured internal rubber in food-grade (FDA and EG 1935/2004 conform). Not approved for drinking water.

Type 39 yellow-white (NBR light)
Like type 39 yellow, but with light-coloured internal rubber in food-grade (FDA and EG 1935/2004 conform). Not approved for drinking water.

Type 39 lilac (FPM/aramid)
For flue gas desulphurisation systems and bio-diesel. High chemical resistance to benzene, xylene, toluene, aromatic, chlorinated hydrocarbons, mineral acids and fuels with an aromatic content of more than 50 %. Temperatures of up to +180 °C.

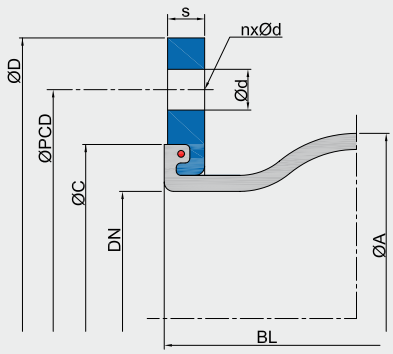
Type 39 silicone (silicone/aramid)
Suitable for hot air, acetic acid. Satisfactory resistance to aliphatic engine and gear oils. Also available in foodstuff quality. Excellent resistance to ageing, UV, ozone and weather. Very good resistance to radiation. No resistance for steam above 120 °C.
No resistance to fuels.

WILLBRANDT **Rubber Expansion Joint Type 39**

Design A - without tie rods

Can be used for absorb movements in all directions (for combined movements, refer to the movement diagram in the technical appendix), for vibration and noise damping.

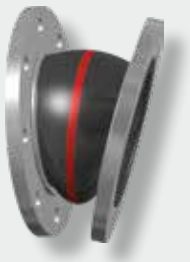
The expansion joint's reaction force must be absorbed through appropriate pipeline guidance (see planning instructions in the appendix).




axial -


axial +


lateral ±


angular ±

Dimensions - design A (Example values - may vary depending on specification)

DN	Overall length	Bellow		Flange PN 10*3						Movement absorption*4				Weight*6
	BL*1	ØA	WF*2	ØD	ØPCD	Ød	n	s	ØC	axial +	axial -	lateral*5 ±	angular ±	
	mm	mm	mm²	mm	mm	mm		mm	mm	mm	mm	mm	∠°	kg
50	**150 - 500**	96	3200	165	125.0	18.0	4	16	86	10	20	15	35	4.1
65	**150 - 500**	110	5300	185	145.0	18.0	8	16	106	10	20	15	30	5.7
80	**150 - 500**	122	8500	200	160.0	18.0	8	18	118	15	20	15	30	7.2
100	**150 - 500**	142	12800	220	180.0	18.0	8	18	138	15	20	15	25	8.3
125	**150 - 500**	170	18700	250	210.0	18.0	8	18	166	15	20	15	25	10.0
150	**150 - 500**	196	25900	285	240.0	23.0	8	20	192	15	20	15	20	13.4
200	**150 - 500**	256	40900	340	295.0	23.0	8	20	252	15	20	15	15	16.7
250	**150 - 500**	306	59900	395	350.0	23.0	12	20	304	15	20	15	10	21.9
300	**150 - 500**	352	82200	445	400.0	23.0	12	20	354	15	20	15	10	25.0
350	**150 - 500**	442	108000	505	460.0	22.0	16	20	412	15	20	15	10	38.8
400	**150 - 500**	495	137900	565	515.0	26.0	16	25	470	20	25	20	8	38.5
450	**150 - 500**	545	180100	615	565.0	26.0	20	25	512	20	25	20	8	47.7
500	**150 - 500**	595	203800	670	620.0	26.0	20	30	570	20	25	20	6	57.2
600	**150 - 500**	695	328600	780	725.0	30.0	20	30	675	20	25	20	6	75.9
700	**150 - 500**	832	418300	895	840.0	30.0	24	35	780	20	25	20	5	128.6
***7750**	**150 - 500**	882	475100	927	914.4	34.4	28	35	830	20	25	20	4	154.0
800	**150 - 500**	932	540700	1015	950.0	33.0	24	40	887	20	25	20	4	163.7
900	**150 - 500**	1032	670600	1115	1050.0	33.0	28	40	985	20	25	20	4	198.7
1000	**150 - 500**	1134	823100	1230	1160.0	36.0	28	40	1085	20	25	20	4	236.0

*1 Overall length range 150 mm to 500 mm. For larger overall lengths the feasibility must be checked. For smaller lengths, please also refer to our types 49, 50 and 55.
*2 The effective area (WF) and the outer diameter of the corrugation (ØA) may vary depending on the design
*3 Other standards/dimensions possible.
*4 Utilisation rate of movement absorption decreases at higher temperatures (see technical appendix).
*5 The lateral movement absorption increases with higher overall length.
*6 For 200 mm overall length
*7 Dimensions according to ANSI B16.47 serie A class 150 lbs

Table values correspond to a bellows design with 6 bar operating pressure at 60 °C.

Important information

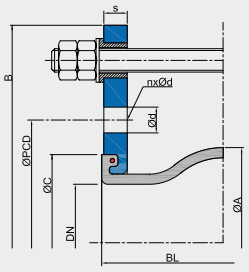
Please note the appropriate fixed point constructions and plain bearings in your piping system, as well as the tolerances as per the FSA Handbook (see the technical appendix on page 117)! For more information please refer to our planning instructions (page 107 - 117).

WILLBRANDT **Rubber Expansion Joint Type 39**

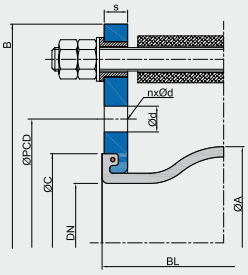
Bracings

A selection of different bracings are available to absorb the reaction force and to protect the bellows from overstretching or excessive compression (detailed description on page 99 - 102):

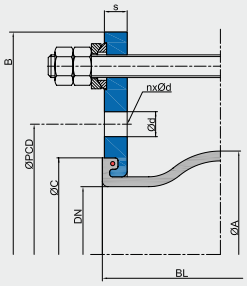
Design B*
Tie rods, mounted in rubber bushing



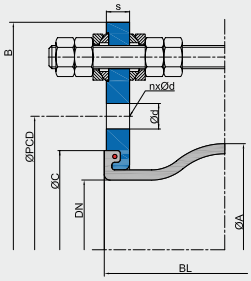
Design C*
Tie rods, mounted in rubber bushing, inside with thrust limiter (plastic bushing)



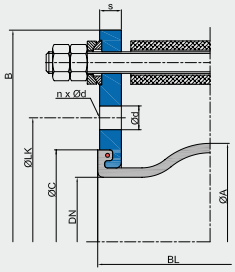
Design E
Tie rods, outside with spherical washers/conical sockets



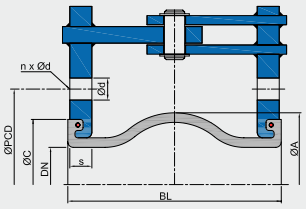
Design M
Tie rods, inside and outside with spherical washers/conical sockets



Design S
Tie rods, outside with limiters spherical washers/conical sockets, inside with thrust limiters (plastic bushing)



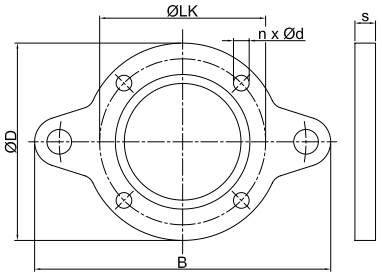
Design F
Hinge



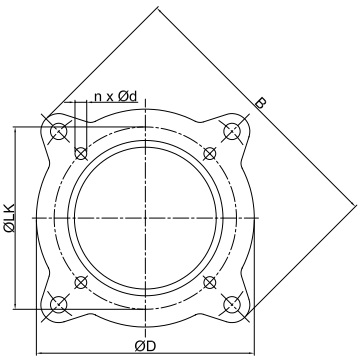
* Note: Design B and C only up to DN 200 PN 10. The lateral movement absorption is reduced by around 50 %.

Flange dimensions for designs with tie rods

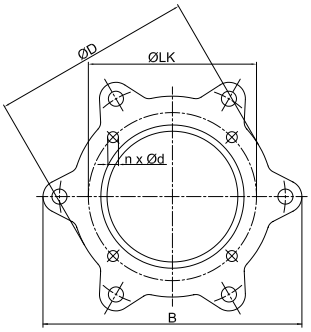
DN	Length	Flange PN 10 (example dimensions)						
	BL	B	ØD	ØPCD	Ød	n	s	ØC
	mm	mm	mm	mm	mm		mm	mm
50	**150 - 500**	255	165	125	18	4	16	86
65	**150 - 500**	275	185	145	18	8	16	106
80	**150 - 500**	290	200	160	18	8	18	118
100	**150 - 500**	310	220	180	18	8	18	138
125	**150 - 500**	340	250	210	18	8	18	166
150	**150 - 500**	375	285	240	23	8	20	192
200	**150 - 500**	440	340	295	23	8	20	252
250	**150 - 500**	509	395	350	23	12	20	304
300	**150 - 500**	559	445	400	23	12	20	354
350	**150 - 500**	619	505	460	22	16	20	412
400	**150 - 500**	700	565	515	26	16	25	470
450	**150 - 500**	760	615	565	26	20	25	512
500	**150 - 500**	810	670	620	26	20	30	570
600	**150 - 500**	930	780	725	30	20	30	675
700	**150 - 500**	1045	895	840	30	24	35	780
800	**150 - 500**	1175	1015	950	33	24	40	887
900	**150 - 500**	1285	1115	1050	33	28	40	985
1000	**150 - 500**	1400	1230	1160	36	28	40	1085



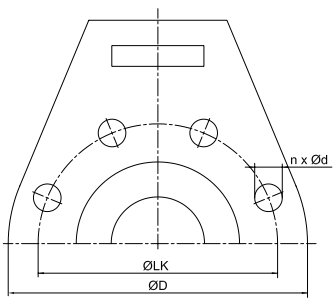
DN 50 - 150



DN 250 - 900



DN 1000



DN 50 - 1000 (Design F)

Important information

For information on the tie rods, please refer to the technical appendix (page 99 - 102)!

WILLBRANDT **Chemical Expansion Joint Type 39 PTFE**

■ not in stock

DN 50 to DN 500

Type 39 PTFE is a low corrugated rubber expansion joint lined with PTFE. Its low corrugation minimises flow resistance. The PTFE lining gives the expansion joint good anti-adhesive properties and is chemically resistant.

The PTFE lining can be used with any Type 39 rubber compound. However, it is important to ensure that the selected rubber compound achieves the highest possible resistance to the medium, as this is the only way to achieve an optimum service life.

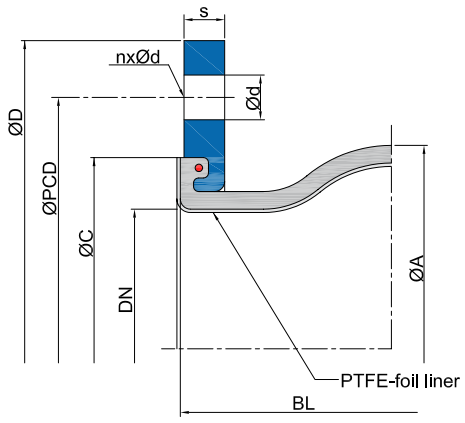
Dimensions - design A

DN*1	Length	Bellow		Flange PN 10*4						Movement absorption			
	BL*2	ØA	WF*3	ØD	ØPCD	Ød	n	s	ØC	axial +	axial -	lateral ±	angular ±
	mm	mm	mm²	mm	mm	mm		mm	mm	mm	mm	mm	∠°
50	**150 - 500**	96	3200	165	125.0	18.0	4	16	86	15	15	15	15.0
65	**150 - 500**	110	5300	185	145.0	18.0	8	16	106	15	15	15	15.0
80	**150 - 500**	122	8500	200	160.0	18.0	8	18	118	15	15	15	15.0
100	**200 - 500**	142	12800	220	180.0	18.0	8	18	138	15	15	15	10.0
125	**150 - 500**	170	18700	250	210.0	18.0	8	18	166	15	15	15	10.0
150	**150 - 500**	196	25900	285	240.0	23.0	8	20	192	15	15	15	10.0
200	**150 - 500**	256	40900	340	295.0	23.0	8	20	252	15	15	15	6.0
250	**150 - 500**	306	59900	395	350.0	23.0	12	20	304	15	15	15	6.0
300	**150 - 500**	352	82200	445	400.0	23.0	12	20	354	15	15	15	6.0
350	**150 - 500**	442	108000	505	460.0	22.0	16	20	412	15	15	15	4.0
400	**150 - 500**	495	137900	565	515.0	26.0	16	25	470	15	15	15	4.0
450	**150 - 500**	545	180100	615	565.0	26.0	20	25	512	15	15	15	4.0
500	**150 - 500**	595	203800	670	620.0	26.0	20	30	570	15	15	15	4.0

*1 Larger nomimal diameters possible after technical inspection.
*2 Overall length range 150 mm to 500 mm. For larger overall lengths the feasibility must be checked. For smaller overall lengths, please also refer to our types 50 PTFE and 55 PTFE.
*3 The effective area (WF) and the outer diameter of the corrugation (ØA) may vary depending on the design.
*4 Other standards/dimensions possible.

Table values correspond to a bellows design with 6 bar operating pressure at 60 °C.

Pressure resistance	Max. 6 bar operating pressure with polyamide cord reinforcement, max. 9 bar operating pressure with aramid or steel cord reinforcement.
Conformity	CE (A2), FDA and EG 1935/2004
Vacuum resistance	Only limited suitability for vacuum operation. A PTFE vacuum supporting ring, which allows full vacuum for small nominal diameters, can be used upt to DN 300. The PTFE supporting ring can only be used up to 50 °C. DN 350 expansion joints are not suitable for vacuum operation.



Important information

Please also note the planning instructions and the tolerances according to the FSA manual (page 117) in the technical appendix!