

TYPE 39

WILLBRANDT RUBBER EXPANSION JOINT

Type 39 is a handmade, low-corrugated rubber expansion joint. Its low corrugation helps to achieve very low flow resistance. It is characterised by its flexible installation length and variety of rubber qualities, which means that a suitable rubber compound is available for every application (see material descriptions on the following pages).

Type 39 is used in plant engineering, water technology and wastewater technology, where it is mainly used in the event of repairs if the existing gap does not correspond to any standard installation length. This avoids expensive full renovation on the piping system. It absorbs noise and vibrations.

Bellow design

Low-corrugated rubber bellow with reinforcement and shaped sealing bead with core ring, self-sealing (no additional seals required). Suitable

for accommodating swiveling flanges.

Flange version

Both sides with swiveling flange made of galvanized steel, with clearance holes, drilled according to DIN PN 10 (standard). Other materials and dimensions are possible.

Pressure resistance

Design according to customer specification, max. 16 bar operating pressure.

Vacuum resistance

- DN 20 to 50 vacuum-resistant without additional accessories
- DN 65 to 250 up to -200 mbar without additional accessories
- DN 300 to 1000 not vacuum-resistant without additional

accessories

- DN 65 to 1000 vacuum-resistant with vacuum supporting spiral/ring



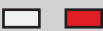



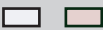











Accessories

- Guide sleeves
- Potential equalisation
- Flame-resistant protective covers
- Dust and splash protection covers
- Earth cover / sun protection hoods
- Segment tie rods
- PTFE lining

Conformity

FDA and EG 1935/2004

SPECIFICATIONS FOR TYPE 39

Colour code	Colour marking	Bellow design			Permissible operating data										
		Core (inner)	Reinforce-ment	Cover (outer)	max. Temperature °C	bar °C		bar °C		bar °C		bar °C		bar °C	
Red		EPDM	Polyamide	EPDM	100	Expansion joints will designed according to your operating parameters.									
Blue		EPDM TW	Polyamide	EPDM	100										
White-red		EPDM beige	Polyamide	EPDM	100										
Red		EPDM AF	Polyamide	EPDM	100										
Green		CSM	Polyamide	CSM	100										
Yellow-grey		NBR	Polyamide	CR	100										
White-grey		NBR beige	Polyamide	CR	100										
Grey		CR	Polyamide	CR	90										
Red-blue-red		EPDM	Aramid	EPDM	100										
Blue-blue-blue		EPDM TW	Aramid	EPDM	100										
White-blue-red		EPDM beige	Aramid	EPDM	100										
Orange-blue-orange		EPDM HT	Aramid	EPDM HT	125										
Red-blue-red		EPDM AF	Aramid	EPDM	100										
Green-blue-green		CSM	Aramid	CSM	100										
Yellow-blue-grey		NBR	Aramid	CR	100										
White-blue-grey		NBR beige	Aramid	CR	100										
Grey-blue-grey		CR	Aramid	CR	90										
Lilac-blue-lilac		FPM	Aramid	FPM	180										
-		Silicone	Aramid	Silicone	180										
-		Silicone	Glass fabric	Silicone	200										

Expansion joints will be designed according to your operating parameters.

Important information

For aggressive media, please see the resistance table (can be requested

separately). The bellow should not be painted or insulated. Please refer to the installation instructions. We will be happy

to send you further information on the individual types and designs.

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 alkaline solutions. Unsuitable for aliphatic, aromatic and chlorinated hydrocarbons, oil or oily media.

Type 39 blue (EPDM TW)

Like Type 39 red, but approved for drinking water.

Type 39 white-red (EPDM beige)

Like Type 39 red, but with light-coloured internal rubber in food-grade.

Type 39 red AF (EPDM AF)

Like Type 39 red, but with abrasion-resistant EPDM rubber compound.

Type 39 green (CSM)

For chemicals, aggressive, chemical wastewater and compressor air containing oil.

Type 39 yellow-grey (NBR)

For oils, fats, gases, diesel fuels, kerosene and crude oil. Not suitable for aromatic and chlorinated hydrocarbons, esters and ketones.

Type 39 white-grey (NBR white)

Like Type 39 yellow-grey, but with light-coloured internal rubber in food-grade. Not approved for drinking water!

Type 39 grey (CR)

For water, wastewater, swimming pool water, salt water, cooling water with anti-corrosive products containing oil, oil mixtures and compressed air containing oil.

Type 39 red-blue-red (EPDM/aramid)

Like Type 39 red, but with aramid fabric.

Type 39 blue-blue-blue (EPDM TW/aramid)

Like Type 39 blue, but with aramid fabric.

Type 39 red-blue-red AF (EPDM AF/aramid)

Like Type 39 red AF, but with aramid fabric.

Type 39 orange-blue-orange (EPDM HT/aramid)

Like Type 39 red, but with aramid fabric and for temperatures up to +125 °C.

Type 39 red-blue-red AF (EPDM AF/aramid)

Like Type 39 red AF, but but for temperatures up to +100°C.

Type 39 green-blue-green (CSM/aramid)

Like Type 39 green, but for temperatures up to +100°C.

Type 39 yellow-blue-grey (NBR/aramid)

Like Type 39 yellow-grey, but with aramid fabric.

Type 39 white-blue-grey (NBR white/aramid)

Like Type 39 white-grey, but with aramid fabric.

Type 39 grey-blue-grey (CR/aramid)

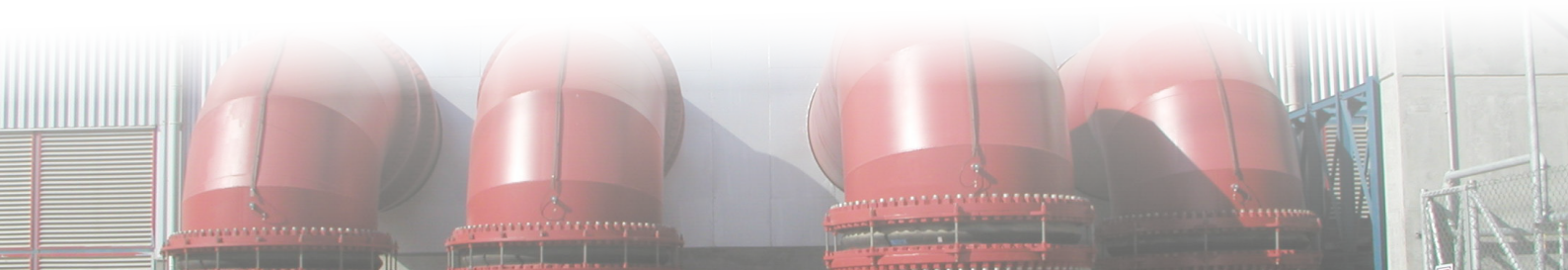
Like Type 39 grey, but with aramid fabric.

Type 39 lilac-blue-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/glass fabric or aramid)

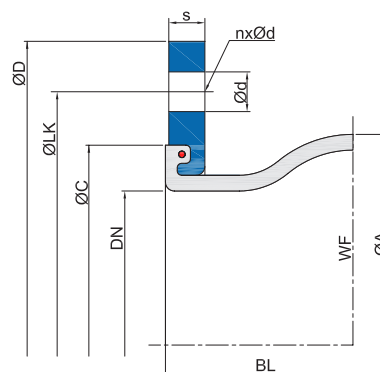
Suitable for hot air, acetic acid. Satisfactory resistance to aliphatic engine and gear oils. Also available in foodstuff quality. Excellent resistance to ageing, UV, ozone and weather. Very good resistance to radiation. No resistance for steam above 120 °C. No resistance to fuels.



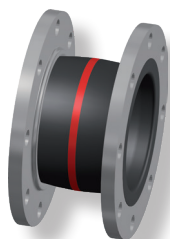
DESIGN A - WITHOUT TIE RODS

Can be used for movement absorption in any direction (for combined movements, see the movement diagram in the technical appendix), noise and vibration absorption.

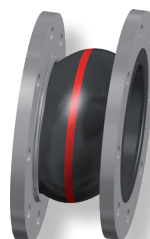
The expansion joint's reaction force must be absorbed via suitable piping (see fitting instructions in the appendix).



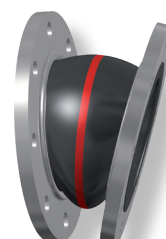
axial -



axial +



lateral +/-



angular +/-

DIMENSIONS - DESIGN A

DN	BL* ¹ mm	Bellow		Flange PN 10* ³					Movement absorption				ØC mm	Weight* ⁵
		AØ mm	WF* ² mm ²	ØD mm	ØPCD mm	Ød mm	n	S mm	AX + mm	AX - mm	LA* ⁴ +/- mm	AN ∠° +/-		
50	200 - 500	96	3200	165	125	18	4	16	10	20	15	35	89	4,1
65	200 - 500	110	5300	185	145	18	8	16	10	20	15	30	104	5,7
80	200 - 500	122	8500	200	160	18	8	18	15	20	15	30	119	7,2
100	200 - 500	142	12800	220	180	18	8	18	15	20	15	25	142	8,3
125	200 - 500	170	18700	250	210	18	8	18	15	20	15	25	169	10,0
150	200 - 500	196	25900	285	240	23	8	20	15	20	15	20	195	13,4
200	200 - 500	256	40900	340	295	23	8	20	15	20	15	15	245	16,7
250	200 - 500	306	59900	395	350	23	12	20	15	20	15	10	295	21,9
300	200 - 500	352	82200	445	400	23	12	20	15	20	15	10	348	25,0
350	200 - 500	442	108000	505	460	22	16	20	15	20	15	10	412	38,8
400	200 - 500	495	137900	565	515	26	16	25	20	25	20	8	470	38,5
450	200 - 500	545	180100	615	565	26	20	25	20	25	20	8	512	47,7
500	200 - 500	595	203800	670	620	26	20	30	20	25	20	6	570	57,2
600	200 - 500	695	328600	780	725	30	20	30	20	25	20	6	675	75,9
700* ⁶	200 - 500	832	418300	895	840	30	24	35	20	25	20	5	780	128,6
750	200 - 500	882	475100	927	914,4	34,4	28	35	20	25	20	4	830	154,0
800	200 - 500	932	540700	1015	950	33	24	40	20	25	20	4	887	163,7
900	200 - 500	1032	670600	1115	1050	33	28	40	20	25	20	4	985	198,7
1000	200 - 500	1134	823100	1230	1160	36	28	40	20	25	20	4	1085	236,0

Permissible degree of utilisation for movement areas:

- up to 50 °C: Utilisation ~ 100 %
- up to 70 °C: Utilisation ~ 75 %
- up to 90 °C: Utilisation ~ 60 %

*¹ For shorter installation lengths, please refer to types 49, 50 and 55.

*² WF = effective area

*³ Other standards/dimensions possible.

*⁴ The greater the installation length, the greater the movement absorption.

*⁵ For the shortest installation length.

*⁶ Dimensions according to ANSI B16.47 Class 150 lbs

Important information

Please note the appropriate fixed point constructions and plain bearings in your

pipng system, as well as the tolerances
For more information please refer to our
installation instructions (p. 97 - 116).

We will be happy to send you further
information on the individual types and
designs.

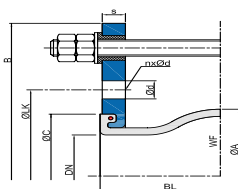
TOLERANCES

DN	Internal dimension	External flange dimension	Pitch circle diameter	Hole diameter	Overall length				Flange thickness			Flange hole alignment	
≤ 500	±5	±6	±5	±2	≤ 150	≤ 300	≤ 600	> 600	≤ 10	≤ 15	>15	LF ≤350	LF ≤350
> 550 - ≤ 1150	± 10	± 13	± 5	± 2	± 5	± 5	± 5	± 1,0%	± 2	± 3	± 4	± 3	± 5
> 1150 - ≤ 1750	± 10/-12	± 19/-13	± 6	± 2	± 5	± 5	± 5	± 1,0%	± 2	± 3	± 4	± 3	± 5
> 1750	± 10/-16	± 25/-14	± 6	± 2	± 6	± 10	± 10	± 1,5%	± 2	± 4	± 4	± 4	± 6
					± 6	± 10	± 10	± 1,5%	± 2	± 4	± 4	± 4	± 6

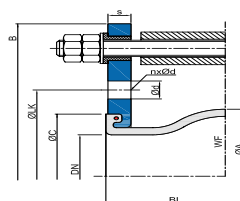
LENGTH LIMITERS

There is a selection of various length limiters/tie rods to absorb the reaction force and to protect the bellow from overstretching or collapsing:

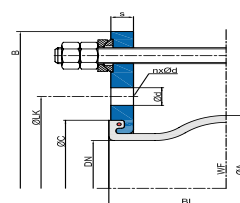
Design B*
with tie rods



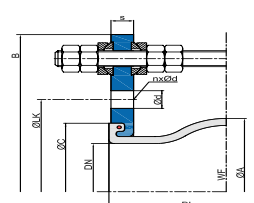
Design C*
with tie rods/thrust limiters



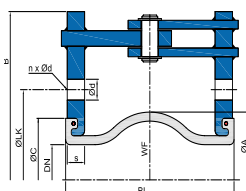
Design E
with tie rods and spherical washers/conical sockets



Design M
with tie rods/thrust limiters with spherical washers/conical sockets



Design F
with hinge

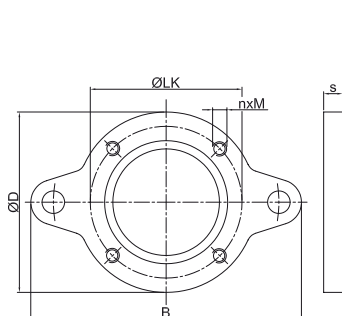


*Note: for design B and C the lateral movement absorption is reduced by around 50 %.

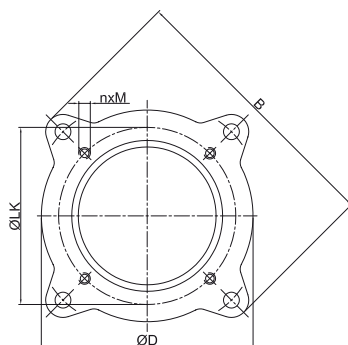
FLANGE DIMENSIONS FOR DESIGNS WITH TIE RODS

DN	Flange PN 10 (example dimensions)							
	Length BL mm	B mm	ØD mm	ØPCD mm	Ød mm	n	S mm	ØC mm
50	200-500	255	165	125	18	4	16	89
65	200-500	275	185	145	18	8	16	104
80	200-500	290	200	160	18	8	18	119
100	200-500	310	220	180	18	8	18	142
125	200-500	340	250	210	18	8	18	169
150	200-500	375	285	240	23	8	20	195
200	200-500	440	340	295	23	8	20	245
250	200-500	509	395	350	23	12	20	295
300	200-500	559	445	400	23	12	20	348
350	200-500	619	505	460	22	16	20	412
400	200-500	700	565	515	26	16	25	470
450	200-500	760	615	565	26	20	25	512
500	200-500	810	670	620	26	20	30	570
600	200-500	930	780	725	30	20	30	675
700	200-500	1045	895	840	30	24	35	780
800	200-500	1175	1015	950	33	24	40	887
900	200-500	1285	1115	1050	33	28	40	985
1000	200-500	1400	1230	1160	36	28	40	1085

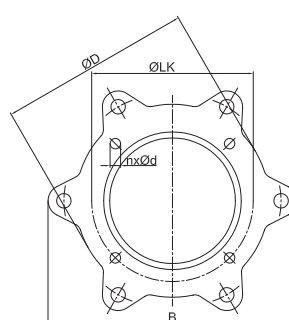
DN 32 - DN 200



DN 250 - DN 900



DN 1000



DN 50 - DN 1000
(DESIGN F)

