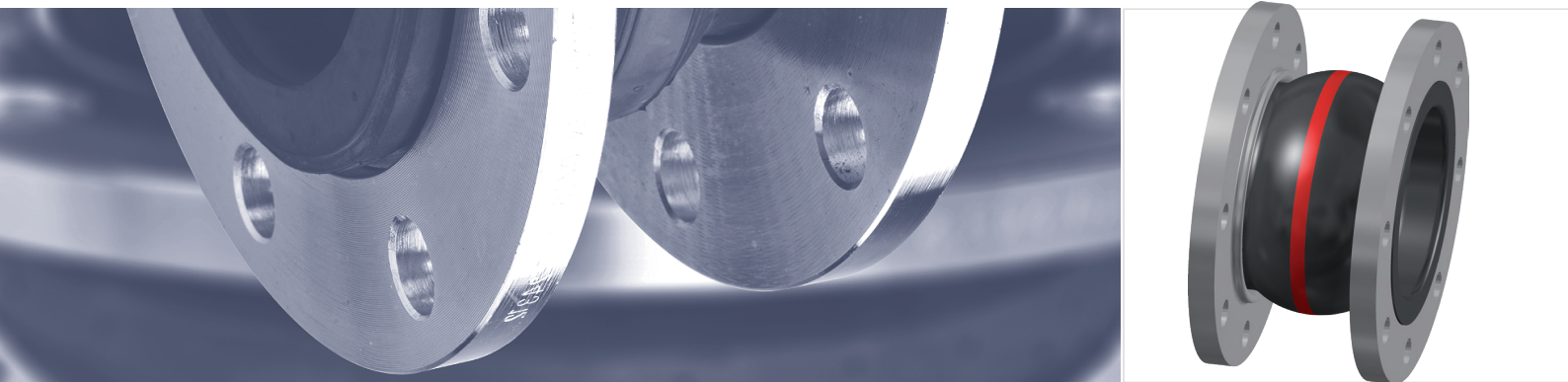




TYPE 55

WILLBRANDT RUBBER EXPANSION JOINT

Type 55 is a low-corrugated, highly elastic rubber expansion joint. Its low corrugation helps to achieve very low flow resistance. It reduces up to 70 % of the incoming energy. It is also characterised by very high movement absorption in all directions and its variety of rubber qualities, which means that a suitable rubber compound is available for almost every application (see material descriptions on the following pages).

Type 55 is used in building technology, plant engineering, water and wastewater technology, engine

construction, shipbuilding and in solar and wind plant engineering. It is especially used to absorb expansion and vibration and to insulate sound.

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.

Approvals/Conformity

Similar to DIN 4809 / TÜV approved, drinking water, shipbuilding approval

FDA and EG 1935/2004 conform

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.

SPECIFICATIONS FOR DN 20 - DN 400

Bellow		Bellow design			Permissible operating data								Short term	Surface resistance Ro	
Colour code	Colour marking	Core (inner)	Reinforcement	Cover (outer)	°C	bar	°C	bar	°C	bar	°C	bar	°C	Core [Ohm]	Cover cm]
Red Sp		EPDM	Aramid	EPDM	-40	10	70	16	100	10	130	8	150	4 x 10 ³	4 x 10 ³
Red		IIR	Polyamide	EPDM	-40	10	50	16	70	12	100	10	120	7 x 10 ⁶	1 x 10 ³
Yellow		NBR	Polyamide	CR	-20	10	50	16	70	12	90	10	100	2 x 10 ²	1 x 10 ³
Green		CSM	Polyamide	CSM	-20	10	50	16	70	12	100	10	110	7 x 10 ⁹	7 x 10 ⁹
Yellow St		NBR	Steel cord	CR	-20	10	60	16	90	10	100	10	100	2 x 10 ²	5 x 10 ¹⁰

Bursting pressure DN 20 - 400 > 48 bar

DN 300 max. 10 bar working pressure / Bursting pressure >30 bar

SPECIFICATIONS FOR DN 450 - DN 1000

Bellow		Bellow design			Permissible operating data				Short term	Surface resistance	
Colour code	Colour marking	Core (inner)	Reinforcement	Cover (outer)	°C bar	°C bar	°C bar	°C bar	C°	Core [Ohm]	Cover [cm]
Red Sp		EPDM	Aramid	EPDM	-40 8	70 10	100 7,5	130 6	150	4 x 10 ³	4 x 10 ³
Red		IIR	Polyamide	EPDM	-40 8	50 10	70 8	100 6	120	7 x 10 ⁶	1 x 10 ³
Yellow		NBR	Polyamide	CR	-20 8	50 10	70 8	90 6	100	2 x 10 ²	1 x 10 ³
Green		CSM	Polyamide	CSM	-20 8	50 10	70 8	100 6	110	7 x 10 ⁹	7 x 10 ⁹

Bursting pressure DN 20 - 400 > 48 bar

The inner core of type 55 red DN 500 and DN 600 is made of EPDM

Important information

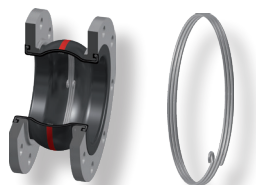
For aggressive media, please see the resistance table (can be requested separately).

The bellows 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.

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

APPLICATION

Type 55 red Sp

For heating installations according to DIN 4809. For many years of operation under constant loading with hot water and heating water at 100 °C/110 °C at 10 bar/6 bar operating pressure. Electrically conductive surface. Not suitable for media with additives containing oil.

Type 55 red

For drinking water, hot water, sea water, cooling water with chemical additives for treating water, saline solutions, weak acids and weak

alkaline solutions. Electrically dissipative inner surface and electrically conductive outer surface. Not suitable for oil products or cooling water with additives containing oil.

Type 55 yellow

For oils, lubricants, fuels, gases, city and natural gas (not liquefied) and DIN EN fuels with an aromatic content up to 50 %. Electrically conductive.

Typ 55 green

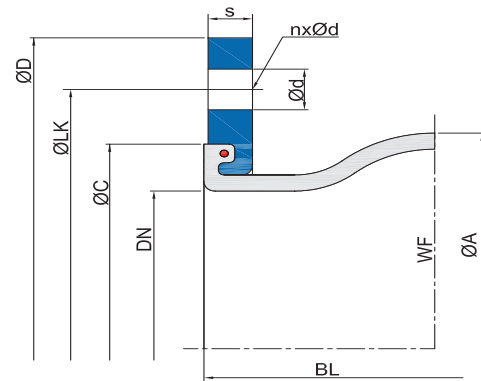
For chemicals, aggressive chemical wastewater and compressor air containing oil. Electrically insulating.

Type 55 yellow St

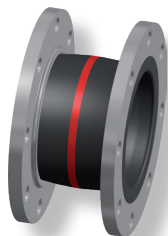
Like Type 50 yellow with additional flame-resistance for up to 30 minutes at 800 °C. Electrically conductive inner surface, electrically insulating outer surface.

DESIGN A - WITHOUT TIE RODS

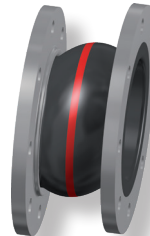
Can be used for movement absorption in any direction (for combined movements, see the movement diagram in the technical appendix), noise and vibration insulation. The expansion joint's reaction force must be absorbed via suitable piping.



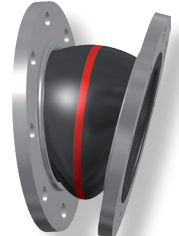
axial -



axial +



lateral +/-



angular +/-

DIMENSIONS FOR DESIGN A

DN	BL	Bellow		Flange PN 10 ^{*2}						Movement absorption				Weight
										AX		LA	AN	
		ØA mm	WF ^{*1} mm²	ØD mm	ØPCD mm	Ød mm	n	s mm	ØC mm	+ mm	- mm	+/- mm	∠° +/-	
20	*3125	81	1700	105	75	12	4	14	65	30	30	30	30	1,5
25	*3125	81	1700	115	85	14	4	14	65	30	30	30	30	1,9
32	*3125	81	1700	140	100	18	4	15	65	30	30	30	30	3,1
40	*3125	86	1800	150	110	18	4	15	74	30	30	30	30	3,5
50	*3125	96	3200	165	125	18	4	16	86	30	30	30	30	3,7
65	*3125	111	5300	185	145	18	8	16	105	30	30	30	30	5,3
80	150	122	8500	200	160	18	8	18	118	30	30	30	30	6,9
100	150	142	12800	220	180	18	8	18	137	30	30	30	20	8,0
125	150	168	18700	250	210	18	8	18	166	30	30	30	20	9,8
150	150	192	25900	285	240	22	8	18	192	30	30	30	20	13,2
200	175	252	41000	340	295	22	8	20	252	30	30	30	12	17,9
250	175	302	59600	395	350	22	12	20	304	30	30	30	12	23,8
300	200	354	82200	445	400	22	12	22	354	30	30	30	12	25,0
350	200	420	117600	505	460	22	16	24	412	30	50	30	8	38,3
400	200	480	154700	565	515	26	16	25	470	30	50	30	8	38,0
450	250	530	204200	615	565	26	20	25	520	30	50	30	8	53,7
500	250	580	227900	670	620	26	20	30	563	20	40	30	6	61,0
600	250	680	311500	780	725	30	20	30	675	20	40	30	6	79,3
700	*4275	800	434200	895	840	30	24	35	780	30	50	30	8	127,3
800	290	880	527400	1015	950	33	24	40	887	30	50	30	6	161,0
900	300	1038	737900	1115	1050	33	28	40	985	30	50	30	5	196,7
1000	300	1138	889400	1230	1160	36	28	40	1085	30	50	30	5	234,5

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} WF = effective area

^{*2} Other standards/dimensions possible.

^{*3} Building lenght 130 mm

^{*4} Buliding lenght 260 mm

Important information

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

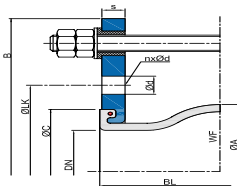
pipng system! You can find information on this in our installation instructions. We will be happy to send you further

information on the individual types and designs.

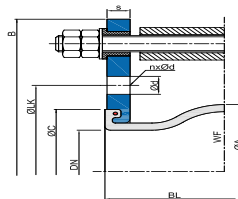
LENGHT LIMITERS

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

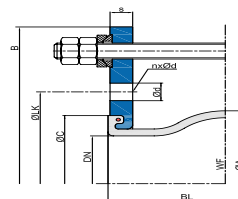
Design B*
with tie rods



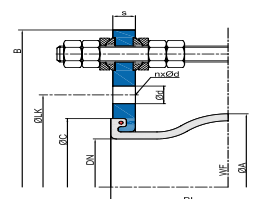
Design C*
with tie rods/thrust limiters



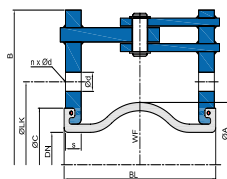
Design E
with tie rods and spherical washers/
conical sockets



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



Design F
with hinge



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

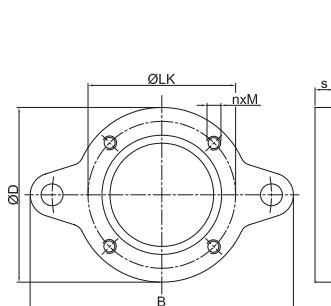
FLANGE DIMENSIONS FOR DESIGNS WITH TIE RODS

DN	Flange PN 10 (example dimensions)							
	BL mm	B mm	ØD mm	ØPCD mm	M	n	s mm	ØC mm
20	*1125	189	105	75	M10	4	14	60
25	*1125	205	115	85	M12	4	14	65
32	*1125	230	140	100	M16	4	15	65
40	*1125	240	150	110	M16	4	15	74
50	*1125	255	165	125	M16	4	16	86
65	*1125	275	185	145	M16	8	16	105
80	150	290	200	160	M16	8	18	118
100	150	310	220	180	M16	8	18	137
125	150	340	250	210	M16	8	18	166
150	150	375	285	240	M20	8	18	192
200	175	440	340	295	M20	8	20	252
250	175	509	395	350	M20	12	20	304
300	200	559	445	400	M20	12	22	354
350	200	619	505	460	M20	16	24	412
400	200	700	565	515	M24	16	25	470
450	250	760	615	565	M24	20	30	520
500	250	810	670	620	M24	20	30	570
600	250	930	780	725	M28	20	30	675
700	*2275	1045	895	840	M28	24	35	780
800	290	1175	1015	950	M30	24	40	887
900	300	1285	1115	1050	M30	28	40	985
1000	300	1400	1230	1160	M36	28	40	1085

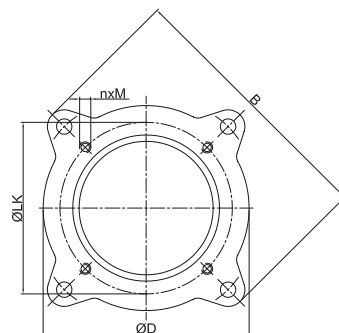
*1 Building lenght 130 mm

*2 Buliding lenght 260 mm

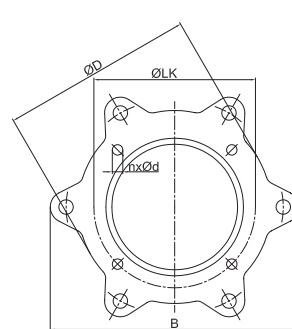
DN 32 - 200



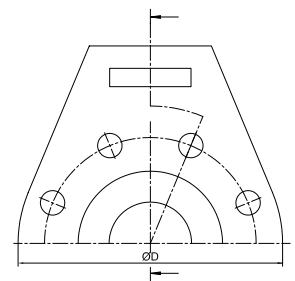
DN 250 - 900



DN 1000



DN 50 - 1000
(Ausführung F)



AXIAL STIFFNESS RATES

DN	BL	Stiffness rates (average value from full way)										
		0 bar	1 bar	2,5 bar	3 bar	4 bar	5 bar	6 bar	8 bar	10 bar	12 bar	16 bar
	mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm
20	*1125	31	56	68	88	128	160	192	192	243	252	270
25	*1125	31	56	68	88	128	160	192	192	243	252	270
32	*1125	31	56	68	88	128	160	192	192	243	252	270
40	*1125	30	54	66	85	124	155	186	186	236	244	261
50	*1125	25	42	51	67	98	116	134	134	173	179	192
65	*1125	24	43	53	69	100	125	150	150	190	197	211
80	150	28	48	58	73	104	126	148	148	185	192	205
100	150	35	59	71	86	116	161	206	206	274	284	304
125	150	36	59	71	93	137	176	214	214	282	292	313
150	150	49	84	102	131	189	241	293	293	390	404	433
200	175	100	153	180	242	365	467	568	568	735	762	816
250	175	105	173	207	267	388	499	609	609	778	807	864
300	200	123	206	248	315	448	553	658	659	883	915	980
350	200	105	153	177	234	349	458	567	567	753	781	836
400	200	154	225	261	346	516	526	535	536	1.090	1.130	1.210
450	250	167	269	320	407	581	742	903	904	1.162	1.205	1.290
500	250	196	316	376	479	686	873	1.060	1.061	1.364	1.414	1.514
600	250	208	264	292	425	692	908	1.123	1.124	1.441	1.494	1.600
700	*2275	140	179	198	372	721	718	714	715	954	636	-
800	290	180	240	270	378	594	785	975	976	1.258	839	-
900	300	200	320	380	483	690	885	1.080	1.081	1.395	930	-
1000	300	225	355	420	527	742	995	1.248	1.249	1.568	1.045	-

*1 Building lenght 130 mm

*2 Buliding lenght 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use

of different materials and manufacturing processes.

LATERAL STIFFNESS RATES

DN	BL	Stiffness rates (average value from full way)										
		0 bar	1 bar	2,5 bar	3 bar	4 bar	5 bar	6 bar	8 bar	10 bar	12 bar	16 bar
	mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm
20	*1125	64	105	125	145	184	212	240	249	259	260	264
25	*1125	64	105	125	145	184	212	240	249	259	260	264
32	*1125	64	105	125	145	184	212	240	249	259	260	264
40	*1125	62	101	121	140	178	205	233	242	251	252	256
50	*1125	50	60	65	70	80	93	105	124	142	143	145
65	*1125	40	65	78	90	115	133	150	156	162	163	165
80	150	34	59	72	92	132	141	151	158	165	166	168
100	150	53	74	85	102	138	150	162	172	181	183	185
125	150	97	162	194	214	253	269	284	324	364	367	372
150	150	116	206	251	267	299	326	354	398	441	444	450
200	175	304	555	680	716	787	840	893	1.009	1.124	1.132	1.147
250	175	356	624	758	826	961	1.032	1.103	1.233	1.363	1.373	1.391
300	200	368	647	786	858	1.003	1.072	1.142	1.280	1.419	1.428	1.448
350	200	305	508	610	661	762	819	875	976	1.076	1.083	1.098
400	200	338	541	642	700	817	882	946	1.061	1.175	1.183	1.199
450	250	342	540	639	700	821	896	971	1.074	1.176	1.184	1.200
500	250	426	687	818	895	1.048	1.126	1.204	1.335	1.465	1.475	1.495
600	250	456	708	834	910	1.062	1.179	1.295	1.425	1.554	1.565	1.586
700	*2275	516	798	939	1.023	1.191	1.320	1.449	1.594	1.740	1.160	-
800	290	558	826	960	992	1.055	1.306	1.557	1.640	1.723	1.149	-
900	300	800	1.253	1.480	1.648	1.984	2.116	2.248	2.378	2.509	1.673	-
1000	300	960	1.536	1.824	2.003	2.361	2.549	2.736	2.826	2.916	1.944	-

*1 Building lenght 130 mm

*2 Buliding lenght 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use

of different materials and manufacturing processes.

ANGULAR STIFFNESS TORQUE

DN	BL	Stiffness torque (average value from full way)					
		0 bar	2,5 bar	4 bar	6 bar	10 bar	16 bar
	mm	N/mm	N/mm	N/mm	N/mm	N/mm	N/mm
20	*1125	0,2	0,5	0,9	1,3	1,7	1,9
25	*1125	0,2	0,5	0,9	1,3	1,7	1,9
32	*1125	0,2	0,5	0,9	1,3	1,7	1,9
40	*1125	0,3	0,6	1,1	1,6	2,0	2,3
50	*1125	0,3	0,6	1,1	1,6	2,0	2,2
65	*1125	0,4	0,9	1,7	2,5	3,2	3,6
80	150	0,6	1,3	2,3	3,3	4,1	4,6
100	150	1,0	2,0	4,0	7,0	9,0	10,0
125	150	2,0	3,0	6,0	10,0	13,0	15,0
150	150	3,0	7,0	12,0	19,0	25,0	28,0
200	175	11,0	20,0	41,0	63,0	82,0	91,0
250	175	18,0	35,0	65,0	102,0	130,0	144,0
300	200	29,0	58,0	105,0	154,0	206,0	229,0
350	200	34,0	57,0	113,0	183,0	244,0	270,0
400	200	65,0	110,0	218,0	226,0	460,0	511,0
450	250	114,0	218,0	396,0	615,0	792,0	676,0
500	250	162,0	311,0	568,0	877,0	1128,0	1069,0
600	250	241,0	340,0	804,0	1305,0	1674,0	1588,0
700	*2275	167,0	237,0	861,0	853,0	1140,0	1265,0
800	290	277,0	416,0	914,0	1501,0	1937,0	2150,0
900	300	386,0	733,0	1330,0	2082,0	2689,0	2985,0
1000	300	531,0	991,0	1751,0	2945,0	3700,0	4107,0

*1 Building lenght 130 mm

*2 Buliding lenght 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use

of different materials and manufacturing processes.

FRictional FORCE

DN	BL	for Designs E and M Frictional force	for Design F Frictional force
	mm	N/bar	Nm/bar
20	*1125	7	0,2
25	*1125	7	0,2
32	*1125	7	0,2
40	*1125	8	0,2
50	*1125	12	0,3
65	*1125	20	0,5
80	150	30	1,0
100	150	44	1,4
125	150	65	2,1
150	150	102	4,4
200	175	124	6,2
250	175	180	11,2
300	200	218	15,4
350	200	120	17,0
400	200	160	22,9
450	250	226	40,5
500	250	212	63,5
600	250	507	138,5
700	*2275	602	180,9
800	290	814	326,2
900	300	921	402,4
1000	300	1130	617,3

*1 Building lenght 130 mm

*2 Buliding lenght 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use

of different materials and manufacturing processes.