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Rubber Expansion Joint Type W50

Type W50 is a low corrugation bellows compensator with good sound insulating characteristics for structure and liquid-borne noise. It is characterized by a very high expansion capability, particularly in the angular plane.

Design:
Low corrugated rubber bellows with reinforcing inserts and integral sealing bead (therefore self-sealing without additional gaskets) for accommodating the swivel flanges. The flanges are provided with through holes.

Details for DN 20 - DN 600

Bellows colour code	Bellows colour label	Design of the bellows Core (inner)	Reinforcing material	Cover (outer)	Permissible operating data °C	bar	°C	bar	°C	bar	°C	bar	Short-term C°	Surface resistance Ro [Ohm cm]
red SP	red-red	EPDM	Aramid	EPDM	-40	10	70	16	100	10	130	8	150	3 x 10^{3}
red	red	IIR	Nylon cord	EPDM	-40	10	50	16	70	12	100	10	120	7 x 10^{6}
yellow	yellow	NBR	Nylon cord	CR	-20	10	50	16	70	12	90	10	100	2 x 10^{2}
white	white	NBR	Nylon cord	CR	-20	10	50	16	70	12	90	10	100	1 x 10^{9}
green	green	CSM	Nylon cord	CSM	-20	10	50	16	70	12	100	10	110	3 x 10^{11}
orange	orange	NBR	Nylon cord	CR	-20	10	50	25	70	20	90	15	100	2 x 10^{2}
black EPDM	black	IIR	Nylon cord	EPDM	-40	10	50	10	70	8	100	6	120	7 x 10^{6}
black CR	black	CR	Nylon cord	CR	-25	10	50	16	70	12	90	10	100	8 x 10^{8}
yellow ST	yellow-yellow	NBR	Steel cord	CR	-20	10	60	16	70	12	90	10	100	7 x 10^{8}
yellow LT	yellow LT	NBR-LT	Nylon cord	CR	-40	10	50	16	70	12	90	10	100	1 x 10^{4}
yellow HT	yellow-blue-yellow	HNBR	Steel cord	CR	-35	10	60	16	70	12	100	10	120	7 x 10^{8}
green/white	white-green-white	FPM	Nylon cord	ECO	-15	10	50	16	70	12	100	10	130	-

Suitable for vacuum up to 0.8 bar abs., without supporting ring (2 m suction)
Suitable for vacuum up to 0 bar abs., with supporting ring (10 m suction)
DN 20 - DN 50 suitable for vacuum without supporting ring.
All compensators can be delivered with earthing straps.

Burst pressure DN 20 - 600 > 48 bar
Burst pressure DN 700 - 1000 > 30 bar

Details for DN 700 - DN 1000

Bellows colour code	Bellows colour label	Design of the bellows Core (inner)	Reinforcing material	Cover (outer)	Permissible operating data °C	bar	°C	bar	°C	bar	°C	bar	Short-term C°	Surface resistance Ro [Ohm cm]
red SP	red-red	EPDM	Aramid	EPDM	-40	8	70	10	100	7,5	130	6	150	3 x 10^{3}
red	red	IIR	Nylon cord	EPDM	-40	8	50	10	70	8	100	6	120	7 x 10^{6}
yellow	yellow	NBR	Nylon cord	CR	-20	8	50	10	70	8	90	6	100	2 x 10^{2}
white	white	NBR	Nylon cord	CR	-20	8	50	10	70	8	90	6	100	1 x 10^{9}
green	green	CSM	Nylon cord	CSM	-20	8	50	10	70	8	100	6	110	3 x 10^{11}
black	black	CR	Nylon cord	CR	-25	8	50	10	70	8	90	6	100	7 x 10^{6}

Suitable for vacuum up to 0.8 bar abs., without supporting ring (2 m suction)
Suitable for vacuum up to 0 bar abs., with supporting ring (10 m suction)
All compensators can be delivered with earthing straps.

Burst pressure DN 20 - 600 > 48 bar
Burst pressure DN 700 - 1000 > 30 bar

Flanges: (Design A)
Swivel flanges both sides (Design A) with integral rubber profile, so that additional gaskets are not required (self-sealing). The flanges are drilled acc. to DIN PN10 as standard. Other specifications in accordance with DIN, ANSI, BS10, JIS. Special flanges are also available.

Flange material:
Standard S235 JRG2 (RSt 37-2) zinc plated and yellow passivated. Other materials available on request. (Flanges up to DN200 are in some cases made with forged collars for the bellows side).

Approvals:

Type 50 red-SP	with TÜV/DIN approval, DIN 4809 for heating installation, Technical Control Number 3 E 003
Type 50 red	with Drinking Water Approval in accordance with 1986 Federal health Bureau KTW Rubber Committee
Type 50 white	with quality assessment in accordance with DIN 7725 - suitable for foodstuffs
Type 50 all	Marine Approval with or without flame protective cover.

Application:

Type W50 red SP
For heating systems according to DIN 4809, with corrosion-proofed aramid fabric for permanent use in hot water and high temperature water, cooling water and hot air. Not suitable for oil emulsive media. Resistance to weather, ageing and ozone. Temperature range -40 up to +130°C, temporarily up to 150°C, surface area electrically conductive.

Type W50 red
For drinking water, hot water with DVGW W270 and ACS approval as well as for sea water, cooling water with chemical additives for water treatment, low concentrated acids and lyes, salt solution. Resistance to weather, ageing and ozone. Temperature range -40 up to +100°C, temporarily up to 120°C, surface area electrically conductive. Not suitable for oil products of all kinds or cooling water with additives of oil emulsive mixtures.

Type W50 black EPDM
For drinking water with DVGW W270 approval as well as for sea water, cooling water, low concentrated acids and lyes, technical alcohols, esters and ketones. Resistance to weather, ageing and ozone. Temperature range -40 up to +90°C, temporarily up to 100°C, surface area electrically conductive, maximum pressure 10 bar .

Type W50 black CR
For cold and hot water, swimming pool water, salt water, waste water, cooling water with oil emulsive corrosion protection material, oil mixture, oil emulsive compressed air. Resistance to weather, ageing and ozone. Temperature range -25 up to +90°C, temporarily up to 100°C, electrically insulting.

Type W50 white
Especially for fat-containing foodstuffs, the inner rubber is in accordance with the German food law KTW. Resistance to weather, ageing and ozone. Temperature range -20 up to +90°C, temporarily up to 100°C, electrically insulting, not suitable for drinking water, inner cover light-coloured.

Type W50 green
Especially for chemical and aggressive chemical waste water, oil emulsive compressor air, regarding the media it is essential to pay attention to the media resistance table. Resistance to weather, ageing and ozone. Temperature range -20°C up to +100°C, temporarily up to 110°C, electrically insulting.

Type W50 green/white
Especially for flue gas desulfurisation plant, biodiesel, good resistance to benzol, xylol, toluol and fuel with an aromatic content of more than 50% aromatic/ chlorinated carbon hydride and mineral acids. Resistance to weather, ageing and ozone. Temperature range -15°C up to +90°C, temporarily up to 130°C, electrically insulating.

Type W50 yellow
For oil, fuel, gas, fuel-ethanol mixture and DIN EN-fuel with up to 50% aromatic content. Natural and town gas with the exception of liquid gas. Resistance to weather, ageing and ozone. Temperature range -20°C up to +90°C, temporarily up to 100°C, electrically conductive.

Type W50 yellow LT
Like type W50 yellow the media and liquid gas is in accordance with DIN EN 589. For tank vehicles and filling stations. Temperature range -40 up to +90°C, temporarily up to 100°C, electrically conductive.

Type W50 yellow ST
For oil, fuel, gas, fuel-ethanol mixture and DIN EN-fuel with up to 50% aromatic content. Natural and town gas with the exception of liquid gas. Resistance to weather, ageing and ozone. Temperature range -20°C up to +90°C, temporarily up to 100°C, flame-resistant up to 30 minutes at 800°C, electrically conductive.

Type W50 yellow HT
For oil, fuel, gas, fuel-ethanol mixture and DIN EN-fuel with up to 50% aromatic content. Natural and town gas with the exception of liquid gas. Resistance to weather, ageing and ozone. Temperature range -35 up to +100°C, temporarily up to 120°C, electrically conductive. Cooling water with oil emulsive corrosion protection, lube and hydraulic oil and sea water.

Type W50 orange
For oil, fuel and gas. Electroconductive, $R = 8 \times 10^3$ Ohm. Application range: Natural and town gas, blast furnace gas, liquid gas acc. to DIN 51622, fuels, lubricants, heating oil, cooling water emulsion.

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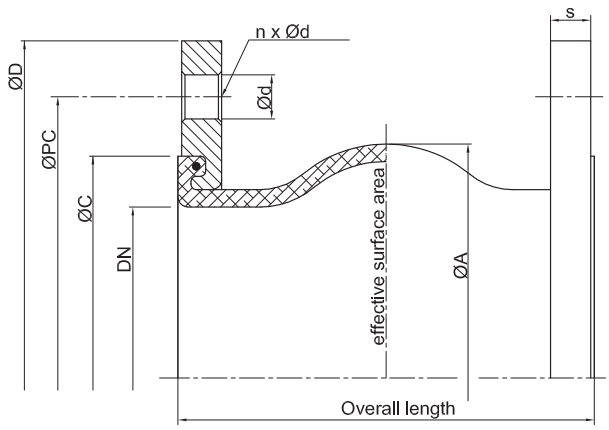

DN	Overall length	Bellows ØA	Bellows Effective area	Flange PN10 ØD	Flange PN10 ØPC	Flange PN10 Ød	Flange PN10 n	Flange PN10 s	ØC	For standard types: Movement absorption axial +	axial -	lat. +/-	∠° +/-	With steel cord: Movement absorption axial +	axial -	lat. +/-	∠° +/-
	mm	mm	cm²	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	
20	130	81	17	105	75	12	4	14	65	30	30	30	30	-	-	-	-
25	130	81	17	115	85	14	4	14	65	30	30	30	30	-	-	-	-
32	130	81	17	140	100	18	4	15	65	30	30	30	30	15	30	10	30
40	130	86	18	150	110	18	4	15	74	30	30	30	30	15	30	10	30
50	130	96	32	165	125	18	4	16	86	30	30	30	30	15	35	10	30
65	130	111	53	185	145	18	4	16	105	30	30	30	30	15	35	10	25
80	130	122	85	200	160	18	8	18	118	30	30	30	30	15	15	10	25
100	130	142	128	220	180	18	8	18	137	30	30	30	20	15	15	10	20
125	130	168	187	250	210	18	8	18	166	30	30	30	20	15	15	10	20
150	130	192	259	285	240	22	8	18	192	30	30	30	20	15	15	10	15
200	130	252	410	340	295	22	8	20	252	30	30	30	12	15	15	10	10
250	130	302	596	395	350	22	12	20	304	30	30	30	12	15	15	10	5
300	130	354	822	445	400	22	12	22	354	30	30	30	12	15	15	10	5
350	200	420	1176	505	460	22	16	24	412	30	50	30	8	-	-	-	-
400	200	480	1547	565	515	26	16	25	470	30	50	30	8	-	-	-	-
500	200	580	2279	670	620	26	20	30	570	30	50	30	8	-	-	-	-
600	200	680	3115	780	725	30	20	30	675	30	50	30	8	-	-	-	-
700	250	800	4342	895	840	30	24	35	780	30	50	30	8	-	-	-	-
800	250	880	5274	1015	950	33	24	40	887	30	50	30	6	-	-	-	-
900	300	1038	7379	1115	1050	33	28	40	985	30	50	30	5	-	-	-	-
1000	300	1138	8894	1230	1160	36	28	40	1085	30	50	30	5	-	-	-	-

Permissible % of indicated movement relative to temperature:
up to 50°C ~ 100%
up to 70°C ~ 75%
up to 90°C ~ 60%

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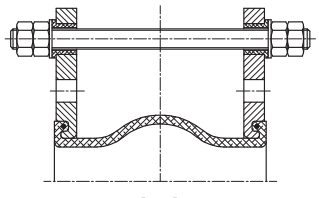
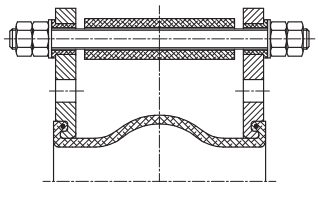
Tie bars (Standard designs B and C):
Since the rubber bellows is a soft flexible component, under pressure the compensator will always try to move in the axial direction because of its reaction force (bellows cross sectional area x working pressure).

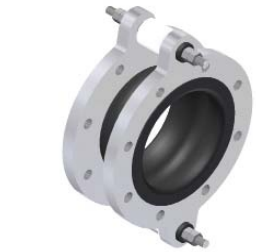
Pipework must be properly anchored and guided (with roller bearing, restraining or anchor points) ; and tie bars fitted on the compensator so that any over-extension of the bellows is avoided. See our range of tie bars.



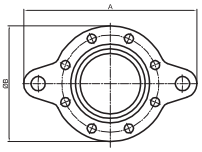
Design B



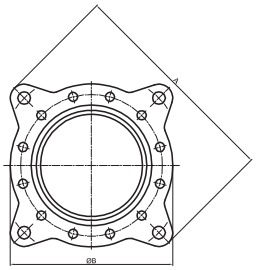
Design C



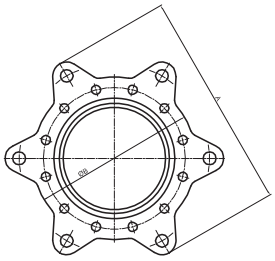
Flange shapes for tie bars as per designs B and C



DN 25 - 200

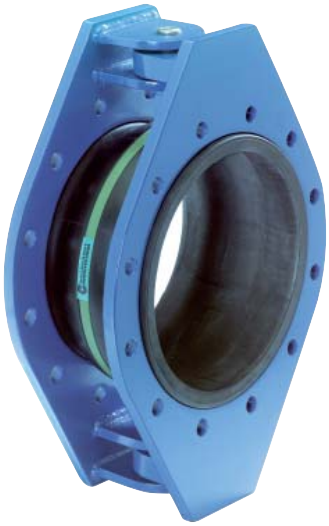


DN 250 - 900 (1000)



DN 1000

Vacuum supporting ring:
Type W50 compensators are not vacuum-resistant.
To prevent the compensator bellows being drawn together by suction under negative pressure, the insertion of a vacuum supporting ring is necessary for a suction value above 2 m (-0.2 BarG, 20 % negative pressure).



Example of a hinged flange design for pipe angulation.

Note:
For aggressive media, see resistance table.
The bellows must not be painted or insulated.
Further installation information available.

Accessories:
Tie Bars / Restraints
Internal sleeves
Flameproof protection covers
Earth covers

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