



Steel compensator - Type SF-10

Axial compensator DN 15 – DN 3400



DN 15 -
DN 500

Structure type SF-10

- ☐ Vacuum-proof, short-length axial compensator, consisting of a stainless steel bellows and rotating flanges



DN 600 -
DN 3400

Applications

- for compensating axial movement
- for reducing tension, damping noise and oscillation in pipes and their system components, e.g.
 - pumps
 - motors
 - machines
- for installation in
 - industrial applications
 - gas and water supply
 - exhaust systems
 - heating installations
 - drinking water systems
- to compensate for installation inaccuracies

Steel bellows PN 2,5 / PN 6 / PN 10 / PN 16

- ☐ Multiple convolution bellows in various stainless steel grades
- ☐ One ply or multi-ply structure
- ☐ DN 15 – DN 500 with flared ends
- ☐ DN 600 – DN 3400 with pre-welded flared ends

Material grade *	Material No. as per DIN EN	Temperature**	Possible uses
Stainless steel	1.4541	-196 °C	Low temperature, acids, lyes, gases, fertilizers
	1.4404, 1.4571	up to +550 °C +550 °C	Media containing chloride, oil, soap, drinking water, food stuff, petrol
Heat-resistant steel	1.4828	+900 °C	Hot gases, steam, air
	1.4878	+800 °C	Hot gases, steam, air
Nickel-based alloy	2.4858 (Incoloy 825)	+450 °C	Sulphuric acid, phosphoric acid, petrol, oil, gases

* Check or inquire about the resistance of material grades to temperature and medium.

** Check or inquire about reduction in pressure by temperature.

Special designs

Other sizes (DN), lengths or pressure ratings on request.

Accessories

- ☐ Internal guide sleeve
- ☐ Protective tube
- ☐ Gas sealings for DVGW-application

Certificates

- ☐ CE (DGR 97/23/EC)
- ☐ American Bureau of Shipping
- ☐ Bureau Veritas
- ☐ DVGW
- ☐ Germanischer Lloyd
- ☐ Lloyd's Register of Shipping

Flanges

Version

- ☐ Rotating flanges
- ☐ Flange drilling for through bolts

Dimensions

Standard: DN 1200 - DN 3400 (PN 2,5)
 DN 15 - DN 2000 (PN 6)
 DN 15 - DN 1000 (PN 10)
 DN 15 - DN 500 (PN 16)
 according to DIN 2501

Others: DIN EN, ANSI, BS etc.

Connection dimensions see technical annex

Materials

Standard: 1.0038 (RSt 37-2), 1.4541, 1.4404

Others: stainless steel, etc.

Corrosion protection

Standard: DN 32 - DN 250 electro-galvanized,
 DN 300 - DN 3400 anti-corrosion primed

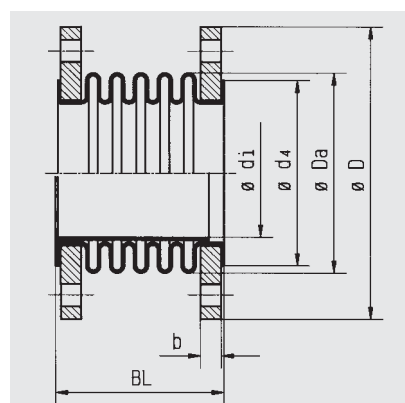
Others: hot-dip galvanized, special varnish, special coating etc.

Note

Please comply with the general technical instructions regarding reaction force, moving force, fixed point load, installation instructions, etc.

Subject to technical alterations and deviations resulting from the manufacturing process.

Version



Type SF-10



Pressure rate **PN 2,5** standard program

DN	BL	$\Delta a_{x_{tot}}$ Axial move- ment mm	C_{ax} Axial spring rate N/mm	Δlat_{tot} Lateral move- ment mm	C_{lat} Lateral spring rate N/mm	A* Effective bellows cross sectional area cm ²	ϕd_4 Flared end ϕ mm	ϕD_a Bellows outer ϕ mm	PN Flange connec- tion DIN 2501	ϕD Flange outer ϕ mm	b Flange thick- ness mm	Weight approx. kg
15	100	20	30	11	15	7	48	36	10	95	14	1.2
20	100	20	30	11	15	7	58	36	10	105	16	2.2
25	105	25	28	13	10	10	68	42	10	115	16	3.2
32	135	32	15	18	8	15	55	52	6	120	16	2.6
40	135	36	17	20	15	22	68	61	6	130	16	3.1
50	160	44	16	24	24	34	80	76	6	140	16	3.6
65	175	56	26	24	23	55	95	96	6	160	18	5.2
80	190	68	21	23	24	79	110	114	6	190	18	7.1
100	195	70	25	23	39	116	140	137	6	210	18	8.0
125	200	72	26	21	49	175	169	168	6	240	20	11.0
150	220	80	28	21	62	247	200	192	6	265	20	13.0
200	230	86	36	19	118	425	255	251	6	320	22	18.0
250	245	96	50	19	208	623	312	301	6	375	20	23.0
300	180	47	185	-	-	992	364	386	6	440	24	27.0
	265	94	92	13	731	-	-	-	-	-	-	29.0
350	185	46	201	-	-	1179	398	418	6	490	26	37.0
	270	93	100	12	931	-	-	-	-	-	-	39.0
400	190	45	226	-	-	1509	452	469	6	540	28	43.0
	275	91	113	10	1321	-	-	-	-	-	-	46.0
450	190	44	251	-	-	1881	498	520	6	595	30	53.0
	275	89	126	9	1804	-	-	-	-	-	-	56.0
500	190	44	276	-	-	2284	548	570	6	645	30	57.0
	275	88	138	8	2383	-	-	-	-	-	-	61.0
600	205	43	328	-	-	3230	653	672	6	755	32	74.0
	275	87	164	7	3936	-	-	-	-	-	-	79.0
700	205	42	380	-	-	4338	756	774	6	860	-	-
	290	85	190	-	-	-	-	-	-	-	-	-
800	205	42	431	-	-	5597	857	875	6	975	-	-
	290	84	215	-	-	-	-	-	-	-	-	-
900	205	42	482	-	-	7016	958	976	6	1075	-	-
	290	84	241	-	-	-	-	-	-	-	-	-
1000	205	41	533	-	-	8612	1060	1078	6	1175	-	-
	290	83	266	-	-	-	-	-	-	-	-	-
1200	205	41	636	-	-	12294	1263	1282	2.5	1375	-	-
	290	82	318	-	-	-	-	-	-	-	-	-
1400	205	41	739	-	-	16584	1465	1484	2.5	1575	-	-
	290	82	370	-	-	-	-	-	-	-	-	-
1600	225	41	843	-	-	21541	1689	1686	2.5	1790	-	-
	310	82	422	-	-	-	-	-	-	-	-	-
1800	225	41	946	-	-	27145	1892	1889	2.5	1990	-	-
	310	82	473	-	-	-	-	-	-	-	-	-
2000	225	41	1043	-	-	33429	2095	2094	2.5	2190	-	-
	310	82	522	-	-	-	-	-	-	-	-	-
2200	225	41	1153	-	-	40331	2298	2297	2.5	2405	-	-
	310	82	576	-	-	-	-	-	-	-	-	-
2400	245	40	1256	-	-	47880	2501	2500	2.5	2605	-	-
	330	81	628	-	-	-	-	-	-	-	-	-
2600	305	44	1956	-	-	55220	2704	2683	2.5	2805	-	-
	400	88	978	-	-	-	-	-	-	-	-	-
2800	305	44	2103	-	-	63864	2904	2883	2.5	3030	-	-
	400	88	1051	-	-	-	-	-	-	-	-	-
3000	305	44	2249	-	-	73136	3104	3083	2.5	3230	-	-
	400	88	1125	-	-	-	-	-	-	-	-	-
3200	305	44	2396	-	-	83037	3304	3283	2.5	3430	-	-
	400	88	1198	-	-	-	-	-	-	-	-	-
3400	305	44	2542	-	-	93566	3504	3483	2.5	3630	-	-
	400	88	1271	-	-	-	-	-	-	-	-	-

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Please inquire for deviating values.

For pure axial movement: inner diameter of internal guide sleeve mentioned in tables PN 6, PN 10, PN 16.

If Δa_x and Δlat occur simultaneously, the table values must be reduced accordingly. The sum of all shares must not exceed 100 %.

*Effective bellows cross sectional area is a theoretical value.



Steel compensator - Type SF-10

Axial compensator

Pressure rate		standard program									
PN 6											
DN	BL	Δax_{tot} Axial spring rate mm	C_{ax} Axial move- ment N/mm	A* Effective bellows cross sectional area cm ²	ϕd_4 Flared end ϕ mm	ϕD_a Bellows outer ϕ mm	ϕd_i Internal guide sleeve ϕ mm	PN Flange connec- tion DIN 2501	ϕD Flange outer ϕ mm	b Flange thickness mm	Weight approx. kg
15	108	17	48	5	45	38	18	10	95	14	1.5
20	108	17	48	7	58	38	18	10	105	16	2.2
25	125	18	96	10	54	54	25	10	115	16	2.4
32	135	26	65	16	54	54	32	6	120	16	2.6
40	135	30	65	25	68	66	38	6	130	16	3.1
50	155	36	94	35	75	78	49	6	140	16	3.6
65	165	40	97	55	95	96	63	6	160	18	5.2
80	175	46	89	79	110	115	77	6	190	18	7.1
100	180	46	97	115	140	137	96	6	210	18	8.0
125	200	50	72	175	165	168	121	6	240	20	11.0
150	230	50	135	245	200	196	150	6	265	20	13.0
200	230	70	164	423	254	253	199	6	320	22	18.0
250	245	66	199	622	310	302	251	6	375	20	23.0
300	195	29	700	996	364	387	310	6	440	24	28.0
	285	59	350					6			32.0
350	200	29	762	1183	398	419	342	6	490	26	39.0
	295	58	381					6			43.0
400	205	28	864	1513	452	470	393	6	540	28	45.0
	300	57	432					6			50.0
450	210	28	967	1885	498	521	444	6	595	30	56.0
	305	56	484					6			61.0
500	210	28	1069	2289	548	571	494	6	645	30	60.0
	305	56	534					6			66.0
600	215	27	1274	3236	653	673	592	6	755	32	78.0
	310	55	637					6			85.0
700	220	27	1479	4345	777	775	696	6	860		
	315	54	739					6			
800	220	27	1681	5605	878	876	795	6	975		
	315	54	840					6			
900	220	26	1885	7025	979	977	895	6	1075		
	315	53	942					6			
1000	240	26	2092	8622	1081	1079	995	6	1175		
	335	53	1046					6			
1200	240	26	2505	12306	1285	1283	1195	6	1405	on request	on request
	335	53	1253					6			
1400	300	26	2914	16598	1507	1485	1395	6	1630		
	395	53	1457					6			
1600	300	26	3326	21583	1711	1689	1595	6	1830		
	395	53	1663					6			
1800	300	25	3735	27192	1914	1892	1795	6	2045		
	395	50	1868					6			
2000	310	22	7890	33461	2117	2096	1995	6	2265		
	410	44	3945					6			

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Please inquire for deviating values.
*Effective bellows cross sectional area is a theoretical value.



Pressure rate / **PN 10** standard program

DN	BL mm	$\Delta a_{x_{tot}}$ Axial move- ment mm	C_{ax} Axial spring rate N/mm	A* Effective bellows cross sectional area cm ²	ϕd_4 Flared end ϕ mm	ϕD_a Bellows outer ϕ mm	ϕd_i Internal guide sleeve ϕ mm	PN Flange connec- tion DIN 2501	ϕD Flange outer ϕ mm	b Flange thick- ness mm	Weight approx. kg
15	108	17	48	5	45	38	18	10	95	14	1.5
20	108	17	48	7	58	38	18	10	105	16	2.2
25	125	18	96	10	54	54	25	10	115	16	2.4
32	135	26	65	16	54	54	32	10	140	16	4.5
40	135	30	65	25	68	66	38	10	150	16	5.0
50	155	36	94	35	75	78	49	10	165	18	6.8
65	165	40	97	55	95	96	63	10	185	18	7.2
80	175	46	89	79	110	115	77	10	200	20	8.2
100	180	46	97	115	140	137	96	10	220	20	11.3
125	200	50	72	175	165	168	121	10	250	22	12.8
150	230	50	135	245	200	196	150	10	285	22	17.8
200	230	70	164	423	254	253	199	10	340	24	22.0
250	245	66	199	622	310	302	251	10	395	26	27.4
300	205	27	700	996	364	387	310	10	445	26	32.0
	295	55	350					10			36.0
350	210	27	762	1183	398	419	342	10	505	28	46.0
	300	54	381					10			50.0
400	220	26	864	1513	452	470	393	10	565	32	61.0
	310	53	432					10			65.0
450	225	26	967	1885	498	521	444	10	615	36	73.0
	320	53	484					10			79.0
500	230	26	1069	2289	548	571	494	10	670	38	87.0
	325	52	534					10			93.0
600	240	25	1274	3236	653	673	592	10	780	42	116.0
	335	51	637					10			123.0
700	240	25	1479	4345	777	775	696	10	895		
	335	51	739					10			
800	240	25	1681	5605	878	876	795	10	1015	on request	on request
	335	50	840					10			
900	240	25	1885	7025	979	977	895	10	1115		
	335	50	942					10			
1000	260	24	2092	8622	1081	1079	995	10	1230		
	355	49	1046					10			

Pressure rate / **PN 16** standard program

DN	BL mm	$\Delta a_{x_{tot}}$ Axial move- ment mm	C_{ax} Axial spring rate N/mm	A* Effective bellows cross sectional area cm ²	ϕd_4 Flared end ϕ mm	ϕD_a Bellows outer ϕ mm	ϕd_i Internal guide sleeve ϕ mm	PN Flange connec- tion DIN 2501	ϕD Flange outer ϕ mm	b Flange thickness mm	Weight approx. kg
15	108	17	48	5	45	38	18	16	95	14	1.5
20	108	17	48	7	58	38	18	16	105	16	2.2
25	125	18	96	10	54	54	25	16	115	16	2.4
32	135	26	65	16	54	54	32	16	140	16	4.5
40	135	30	65	25	68	66	38	16	150	16	5.0
50	155	36	94	35	75	78	49	16	165	18	5.8
65	165	40	97	55	95	96	63	16	185	18	7.2
80	175	46	89	79	110	115	77	16	200	20	8.2
100	180	46	97	115	140	137	96	16	220	20	11.3
125	200	50	72	175	165	168	121	16	250	22	12.8
150	230	50	135	245	200	196	150	16	285	22	17.8
200	230	70	164	423	254	253	199	16	340	26	24.0
250	245	52	237	622	310	302	251	16	405	29	35.0
300	225	22	1319	998	364	388	310	16	460	32	44.0
	325	44	659					16			49.0
350	230	22	1438	1185	398	420	342	16	520	35	63.0
	330	44	719					16			68.0
400	240	21	1636	1516	452	471	393	16	580	38	79.0
	340	43	818					16			86.0
450	250	21	1833	1888	498	522	444	16	640	42	101.0
	350	43	916					16			108.0
500	260	21	2025	2293	548	572	494	16	715	46	142.0
	360	42	1013					16			150.0

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Please inquire for deviating values.
*Effective bellows cross sectional area is a theoretical value.