STENFLEX®

max. +900 °C | min. -196 °C | PN 16 | AXIAL

SA-10/1-C12

Steel expansion joint ▪ Type SA-10

Axial expansion joint DN 15 – DN 2800

Applications

- for compensating axial movement
- for reducing tension, damping noise and oscillation in pipes and their system components, e.g.
  - compressors
  - motors
  - turbines
  - machines
  - process plants
- for installation in
  - industrial applications
  - exhaust systems
  - heating installations
  - gas supply lines

Structure type SA-10

☐ Vacuum-proof axial expansion joint consisting of a stainless steel bellows and welded pipe ends (welding ends)

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

Material grade *	Material No. as per DIN EN	Temperature**	Possible uses
Stainless steel	**1.4541**	**-196 °C**	**Low temperature, acids, lyes, gases,**
		up to +550 °C	**fertilizers**
	1.4404, 1.4571	**+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, öl, gases**

* Check or inquire about the resistance of material grades to temperature and medium.
** Check or inquire about reduction in pressure by temperature.

Welding ends

Version
☐ Welded pipe ends
Dimensions
Standard: see tables
Others: DIN EN, ANSI, BS etc.

Materials
Standard: 1.0305 (St 35.8I), 1.0038 (S235JR), 1.4541
Others: stainless steel, etc.
Corrosion protection
Standard: anti-corrosion primed
Others: special varnish, 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.

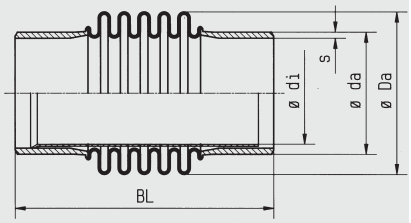
Special designs

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

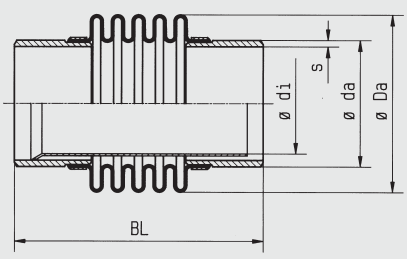
Accessories

☐ Internal guide sleeve
☐ Protective tube

Versions



DN 15 - DN 100



DN 125 - DN 2800

Type SA-10

Certificates

- ☐ CE (DGR 97/23/EC)
- ☐ American Bureau of Shipping
- ☐ Bureau Veritas
- ☐ DVGW (DN 32 - DN 200)
- ☐ Germanischer Lloyd
- ☐ Lloyd´s Register of Shipping

Pressure rate PN 2.5 standard program

DN	BL mm	Δ ax_{tot} Axial movement mm	C_{ax} Axial spring rate N/mm	Δ lat_{tot} Lateral movement mm	C_{lat} Lateral spring rate N/mm	A* Effective bellows cross sectional area cm^2	ø D_a Bellows outer ø mm	ø d_a x s Pipe connection mm	Weight approx. kg
20	175	20	30	11	15	7	36	26,9x2,3	0.2
25	185	25	28	13	17	10	42	33,7x2,6	0.4
32	185	28	16	22	12	15	51	42,4x2,6	0.5
40	190	30	17	20	15	22	61	48,3x2,6	0.6
50	205	40	18	20	17	34	76	60,3x2,9	0.7
65	230	52	23	20	22	55	96	76,1x2,9	1.1
80	240	60	22	22	26	75	114	88,9x3,2	1.5
100	240	64	20	20	30	114	136	114,3x4,0	1.6
125	270	72	26	21	49	174	168	139,7x4,0	2.8
150	300	80	28	21	62	246	197	168,3x4,5	3.8
200	300	86	36	19	118	424	253	219,1x6,3	5.5
250	300	96	50	19	208	622	302	273,0x6,3	6.1
300	245	49	119			990	386	323,9x8,0	13.0
300	370	122	48	24	204	990	386	323,9x8,0	16.0
350	245	48	129			1176	418	355,6x8,0	14.0
350	370	120	52	21	264	1176	418	355,6x8,0	18.0
400	245	47	146			1507	469	406,4x8,0	17.0
400	370	118	58	18	381	1507	469	406,4x8,0	21.0
450	245	46	162			1878	520	457x8,0	19.0
450	370	116	65	16	528	1878	520	457x8,0	23.0
500	245	45	178			2282	570	508x8,0	21.0
500	370	114	71	14	705	2282	570	508x8,0	26.0
600	245	44	212			3227	672	610x8,0	25.0
600	370	112	85	12	1185	3227	672	610x8,0	31.0
700	245	44	246			4336	774	711x8,0	29.0
700	370	110	98	10	1847	4336	774	711x8,0	37.0
800	245	43	279			5595	875	813x8,0	34.0
800	370	109	112	9	2707	5595	875	813x8,0	42,0
900	245	43	313			7014	976	914x10,0	45.0
900	370	109	125	8	3799	7014	976	914x10,0	54.0
1000	245	43	346			8610	1078	1016x10,0	50.0
1000	370	108	138	7	5164	8610	1078	1016x10,0	61.0
1200	245	42	413			12291	1282	1219x10,0	60.0
1200	370	107	165			12291	1282	1219x10,0	73.0
1400	245	42	478			16536	1482	1420x10,0	70.0
1400	370	107	191			16536	1482	1420x10,0	85.0
1600	245	42	543			21408	1682	1620x10,0	80.0
1600	370	107	217			21408	1682	1620x10,0	97.0
1800	245	42	607			26909	1882	1820x10,0	90.0
1800	370	107	243			26909	1882	1820x10,0	109.0
2000	245	42	672			33039	2082	2020x10,0	100.0
2000	370	107	269			33039	2082	2020x10,0	121.0
2200	245	42	736			39796	2282	2220x10,0	110.0
2200	370	107	294			39796	2282	2220x10,0	133.0
2400	245	42	800			47182	2482	2420x10,0	120.0
2400	370	107	320			47182	2482	2420x10,0	145.0
2800	245	42	928			63839	2882	2820x10,0	139.0
2800	400	107	371			63839	2882	2820x10,0	169.0

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Max. allowable pressure pulsation of 0.25 bar (brief periods). 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 Δ ax and Δ lat 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.

STENFLEX®

SA-10/3-C12

Steel expansion joint ▪ Type SA-10

Axial expansion joint

Pressure rate PN 6 standard program

DN	BL mm	Δ ax_{tot} Axial movement mm	C_{ax} Axial spring rate N/mm	A* Effective bellows cross sectional area cm^2	ø D_a Bellows outer ø mm	ø d_i Guide sleeve inner ø mm	ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21.3x2.0	0.3
20	175	24	49	7	38	18	26.9x2.3	0.2
25	185	20	49	16	54	24	33.7x2.6	0.5
32	185	20	49	16	54	32	42.4x2.6	0.4
40	190	26	67	25	66	37	48.3x2.6	0.6
50	205	34	87	36	79	51	60.3x2.9	0.9
65	230	36	102	54	96	64	76.1x2.9	1.3
80	230	40	80	78	116	78	88.9x3.2	1.9
100	240	40	91	115	136	99	114.3x4.0	2.1
125	270	50	79	173	168	123	139.7x4.0	3.6
150	300	50	156	243	196	150	168.3x4.5	4.8
200	300	70	237	422	253	199	219.1x6.3	6.8
250	300	52	624	620	302	251	273.0x6.3	8.3
300	245	43	119	990	386	294	323.9x8.0	13
300	400	74	182	993	387	294	323.9x8.0	20
350	245	42	129	1176	418	326	355.6x8.0	14
350	400	73	199	1180	419	326	355.6x8.0	22
400	245	41	146	1507	469	376	406.4x8,0	17
400	400	72	226	1511	470	376	406.4x8.0	25
450	245	38	178	1870	518	427	457x8.0	19
450	400	71	253	1883	521	427	457x8.0	29
500	245	36	215	2265	566	478	508x8.0	21
500	370	79	117	2240	560	478	508x8.0	25
600	245	36	256	3207	668	580	610x8.0	25
600	370	82	125	3187	664	580	610x8.0	30
700	245	34	327	4301	768	681	711x8.0	29
700	370	84	131	4301	768	681	711x8.0	36
800	245	32	411	5542	867	783	813x8.0	33
800	370	80	164	5542	867	783	813x8.0	41
900	245	32	460	6955	968	880	914x10.0	44
900	370	80	184	6955	968	880	914x10.0	53
1000	255	27	1369	8619	1079	982	1016x10.0	55
1000	400	68	548	8619	1079	982	1016x10.0	72
1200	255	27	1634	12303	1283	1185	1219x10.0	66
1200	400	68	654	12303	1283	1185	1219x10.0	87
1400	255	27	1894	16549	1483	1386	1420x10.0	77
1400	400	68	757	16549	1483	1386	1420x10.0	101
1600	255	27	2152	21424	1683	1586	1620x10.0	88
1600	400	68	861	21424	1683	1586	1620x10.0	116
1800	255	27	2410	26927	1883	1786	1820x10.0	99
1800	400	68	964	26927	1883	1786	1820x10.0	130
2000	255	27	2667	33058	2083	1986	2020x10.0	110
2000	400	68	1067	33058	2083	1986	2020x10.0	144

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Max. allowable pressure pulsation of 0.6 bar (brief periods). Please inquire for deviating values.
*Effective bellows cross sectional area is a theoretical value.

Pressure rate PN 10 standard program

DN	BL mm	Δax_{tot} Axial movement mm	C_{ax} Axial spring rate N/mm	A* Effective bellows cross sectional area cm^2	ø D_a Bellows outer ø mm	ø d_i Guide sleeve inner ø mm	ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21.3x2.0	0.3
20	175	24	49	7	38	18	26.9x2.3	0.2
25	185	20	49	16	54	24	33.7x2.6	0.5
32	185	20	49	16	54	32	42.4x2.6	0.4
40	190	26	67	25	66	37	48.3x2.6	0.6
50	205	34	87	36	79	51	60.3x2.9	0.9
65	230	36	102	54	96	64	76.1x2.9	1.3
80	230	40	80	78	116	78	88.9x3.2	1.9
100	240	40	91	115	136	99	114.3x4.0	2.1
125	270	50	79	173	168	123	139.7x4.0	3.6
150	300	50	156	243	196	150	168.3x4.5	4.8
200	300	70	237	422	253	199	219.1x6.3	6.8
250	300	52	624	620	302	251	273.0x6.3	8.3
300	250	20	439	979	382	294	323.9x8.0	13
300	390	46	212	979	382	294	323.9x8.0	16
350	250	20	481	1170	416	326	355.6x8.0	14
350	390	48	211	1170	416	326	355.6x8.0	18
400	250	19	549	1507	469	376	406,4x8.0	17
400	390	49	220	1507	469	376	406.4x8.0	21
450	250	19	616	1878	520	427	457x8.0	19
450	390	49	246	1878	520	427	457x8.0	23
500	250	19	682	2282	570	478	508x8.0	21
500	390	49	273	2282	570	478	508x8.0	26
600	250	18	894	3217	670	580	610x8.0	25
600	390	46	358	3217	670	580	610x8.0	31
700	255	26	970	4343	775	681	711x8.0	33
700	400	65	388	4343	775	681	711x8.0	45
800	255	25	1104	5603	876	783	813x8.0	37
800	400	64	442	5603	876	783	813x8.0	51
900	255	25	1236	7023	977	880	914x10.0	49
900	400	64	495	7023	977	880	914x10.0	65
1000	255	25	1369	8619	1079	982	1016x10.0	55
1000	400	64	548	8619	1079	982	1016x10.0	72
1200	255	26	1634	12303	1283	1185	1219x10.0	66
1200	400	65	654	12303	1283	1185	1219x10.0	87

Pressure rate PN 16 standard program

DN	BL mm	Δax_{tot} Axial movement mm	C_{ax} Axial spring rate N/mm	A* Effective bellows cross sectional area cm^2	ø D_a Bellows outer ø mm	ø d_i Guide sleeve inner ø mm	ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21.3x2.0	0.3
20	175	24	49	7	38	18	26.9x2.3	0.2
25	185	20	49	16	54	24	33.7x2.6	0.5
32	185	20	49	16	54	32	42.4x2.6	0.4
40	190	26	67	25	66	37	48.3x2.6	0.6
50	205	34	87	36	79	51	60.3x2.9	0.9
65	230	36	102	54	96	64	76.1x2.9	1.3
80	230	40	80	78	116	78	88.9x3.2	1.9
100	240	40	91	115	136	99	114.3x4.0	2.1
125	270	50	79	173	168	123	139.7x4.0	3.6
150	300	50	156	243	196	150	168.3x4.5	4.8
200	300	70	237	422	253	199	219.1x6.3	6.8
250	300	52	624	620	302	251	273.0x6.3	8.3
300	255	25	455	993	387	294	323.9x8.0	15
300	410	52	379	990	386	294	323.9x8.0	22
350	255	25	496	1180	419	326	355.6x8.0	16
350	410	54	379	1182	420	326	355.6x8.0	25
400	255	24	564	1511	470	376	406.4x8.0	19
400	410	54	431	1514	471	376	406.4x8.0	28
450	255	23	693	1875	519	427	457.0x8.0	21
450	410	53	484	1886	522	427	457.0x8.0	32
500	255	23	767	2278	569	478	508.0x8.0	23
500	410	53	535	2290	572	478	508.0x8.0	36
600	260	21	1600	3237	674	580	610.0x8.0	30
600	410	52	640	3237	674	580	610.0x8.0	43
700	260	20	1860	4347	776	681	711.0x8.0	35
700	410	52	744	4347	776	681	711.0x8.0	50
800	260	20	2115	5608	877	783	813.0x8.0	40
800	410	52	846	5608	877	783	813.0x8.0	58
900	260	21	2369	7029	978	880	914.0x10.0	52
900	410	52	948	7029	978	880	914.0x10.0	72
1000	260	21	2625	8626	1080	982	1016.0x10.0	58
1000	410	52	1050	8626	1080	982	1016.0x10.0	80

Table values refer to +20 °C, bellows material 1.4541, 1000 cycles. Max. allowable pressure pulsation of 0.6 bar (brief periods). Please inquire for deviating values. *Effective bellows cross sectional area is a theoretical value.