STENFLEX®

STEEL EXPANSION JOINT TYPE SA-10

AXIAL EXPANSION JOINT DN 15 – DN 2800

STRUCTURE TYPE SA-10 STEEL BELLOWS PN 2,5, PN 6, PN 10, PN 16

- Vacuum-proof axial expansion joint consisting of a stainless steel bellows and welded pipe ends (welding ends)
- Multiple convolution bellows in various stainless steel grades
- Single ply or multi-ply structure

Material grade*	Material No. as per DIN EN	Temperature**	Possible uses
Stainless steel	1.4541	-196 °C up to +550 °C	Low temperature, acids, lyes, gases, fertilizers
	1.4404 1.4571	+550 °C	Media containing chloride, oil, soap, drinking water, food stuff, petrol
Heat-resistant steel	1.4828 1.4878	+900 °C +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 / VERSIONS

- Welded pipe ends

	Standard	Others
Dimensions	see tables page 117 – 119	on request
Materials	1.0345 (P235GH), 1.0038 (S235JR), 1.4541	stainless steel etc.
Corrosion protection	anti-corrosion primed	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.

APPLICATIONS

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

SPECIAL DESIGN

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

CERTIFICATES

- CE (PED 2014/68/EU)
- American Bureau of Shipping
- Bureau Veritas
- DVGW (DN 32 – DN 200)
- RINA

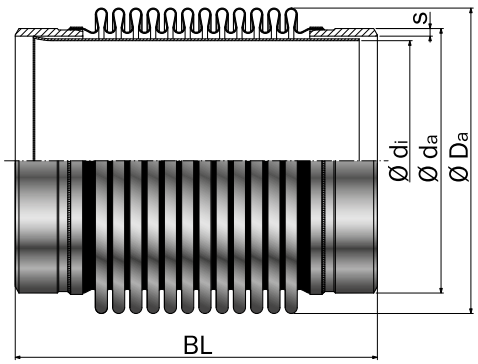
ACCESSORIES

- Internal guide sleeve
- Protective tube

PRESSURE RATE STANDARD PROGRAM PN 2,5

DN	BL mm	Δ ax_{tot}** Axial move-ment mm	C_{ax} Axial spring rate N/mm	Δ lat_{tot} Lateral move-ment 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	106	191			16536	1482	1420x10.0	85.0
1600	245	42	543			21408	1682	1620x10.0	80.0
1600	370	106	217			21408	1682	1620x10.0	97.0
1800	245	42	607			26909	1882	1820x10.0	90.0
1800	370	106	243			26909	1882	1820x10.0	109.0
2000	245	42	672			33039	2082	2020x10.0	100.0
2000	370	106	269			33039	2082	2020x10.0	121.0
2200	245	42	736			39796	2282	2220x10.0	110.0
2200	370	106	294			39796	2282	2220x10.0	133.0
2400	245	42	800			47182	2482	2420x10.0	120.0
2400	370	106	320			47182	2482	2420x10.0	145.0
2800	245	42	928			63839	2882	2820x10.0	139.0
2800	370	105	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 D ax and D 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. **This value represents the total possible movement. Example: Δ ax_{tot}= 28mm. This means that the expansion joint has a total movement value of 28 mm (= +/- 14 mm).



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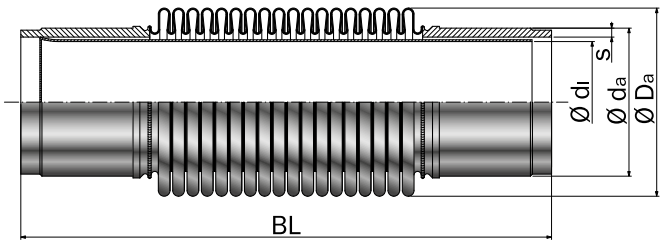

DN 15 – DN 100

Type SA-10 with inner guide sleeve

STENFLEX®

STEEL EXPANSION JOINT TYPE SA-10

AXIAL EXPANSION JOINT
DN 15 – DN 2800

PRESSURE RATE STANDARD PROGRAM PN 6

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 Internal guide sleeve Ø mm	Ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21,3x2,0	0,4
20	175	24	49	7	38	18	26,9x2,3	0,4
25	185	20	49	16	54	24	33,7x2,6	0,6
32	185	20	49	16	54	32	42,4x2,9	0,5
40	190	26	67	25	66	37	48,3x2,6	0,6
50	205	34	87	36	79	51	60,3x2,9	0,8
65	230	36	102	54	96	64	76,1x2,9	1,4
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	38	237	422	253	199	219,1x6,3	6,8
250	300	38	624	620	302	251	273,0x6,3	8,3
300	255	29	455	993	387	294	323,9x8,0	13
300	400	74	182	993	387	294	323,9x8,0	20
350	255	29	496	1180	419	326	355,6x8,0	14
350	400	73	199	1180	419	326	355,6x8,0	22
400	255	28	564	1511	470	376	406,4x8,0	17
400	400	72	226	1511	470	376	406,4x8,0	25
450	255	28	632	1883	521	427	457x8,0	19
450	400	71	253	1883	521	427	457x8,0	29
500	255	28	699	2287	571	478	508x8,0	21
500	400	71	280	2287	571	478	508x8,0	25
600	255	28	835	3233	673	580	610x8,0	25
600	400	70	334	3233	673	580	610x8,0	30
700	255	27	970	4343	775	681	711x8,0	29
700	400	69	388	4343	775	681	711x8,0	36
800	255	27	1104	5603	876	783	813x8,0	33
800	400	69	442	5603	876	783	813x8,0	41
900	255	27	1236	7023	977	880	914x10,0	44
900	400	68	495	7023	977	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	67	861	21424	1683	1586	1620x10,0	116
1800	255	27	2410	26927	1883	1786	1820x10,0	99
1800	400	67	964	26927	1883	1786	1820x10,0	130
2000	255	27	2667	33058	2083	1986	2020x10,0	110
2000	400	67	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. **This value represents the total possible movement.
Example: Δ ax_{tot}= 28mm. This means that the expansion joint has a total movement value of 28 mm (= +/- 14 mm).

PRESSURE RATE STANDARD PROGRAM PN 10

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 Internal guide sleeve Ø mm	Ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21.3x2.0	0.4
20	175	24	49	7	38	18	26.9x2.3	0.4
25	185	20	49	16	54	24	33.7x2.6	0.6
32	185	20	49	16	54	32	42.4x2.9	0.5
40	190	26	67	25	66	37	48.3x2.6	0.6
50	205	34	87	36	79	51	60.3x2.9	0.8
65	230	36	102	54	96	64	76.1x2.9	1.4
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	38	237	422	253	199	219.1x6.3	6.8
250	300	38	624	620	302	251	273.0x6.3	8.3
300	255	28	455	993	387	294	323.9x8.0	16
300	400	62	220	982	383	294	323.9x8.0	20
350	255	27	496	1180	419	326	355.6x8.0	17
350	400	66	218	1174	417	326	355.6x8.0	22
400	255	27	564	1511	470	376	406.4x8.0	20
400	400	67	226	1511	470	376	406.4x8.0	25
450	255	27	632	1883	521	427	457x8.0	22
450	400	67	253	1883	521	427	457x8.0	29
500	255	26	699	2287	571	478	508x8.0	25
500	400	66	280	2287	571	478	508x8.0	32
600	255	26	835	3233	673	580	610x8.0	30
600	400	66	334	3233	673	580	610x8.0	38
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	260	21	3135	12311	1284	1185	1219x10.0	70
1200	410	54	1254	12311	1284	1185	1219x10.0	96

PRESSURE RATE STANDARD PROGRAM PN 16

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 Internal guide sleeve Ø mm	Ø d_a x s Pipe connection mm	Weight approx. kg
15	175	24	49	7	38	14	21.3x2.0	0.4
20	175	24	49	7	38	18	26.9x2.3	0.4
25	185	20	49	16	54	24	33.7x2.6	0.6
32	185	20	49	16	54	32	42.4x2.9	0.5
40	190	26	67	25	66	37	48.3x2.6	0.6
50	205	34	87	36	79	51	60.3x2.9	0.8
65	230	36	102	54	96	64	76.1x2.9	1.4
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	38	237	422	253	199	219.1x6.3	6.8
250	300	38	624	620	302	251	273.0x6.3	8.3
300	260	22	863	995	388	294	323.9x8.0	16
300	410	52	379	990	386	294	323.9x8.0	22
350	260	21	946	1182	420	326	355.6x8.0	17
350	410	54	379	1182	420	326	355.6x8.0	25
400	260	21	1078	1514	471	376	406.4x8.0	20
400	410	54	431	1514	471	376	406.4x8.0	28
450	260	21	1210	1886	522	427	457.0x8.0	22
450	410	53	484	1886	522	427	457.0x8.0	32
500	260	21	1338	2290	572	478	508.0x8.0	25
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	270	22	3486	7044	980	880	914.0x10.0	53
900	430	56	1394	7044	980	880	914.0x10.0	83
1000	270	22	3860	8643	1082	982	1016.0x10.0	59
1000	430	56	1544	8643	1082	982	1016.0x10.0	92

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. **This value represents the total possible movement. Example: Δ ax_{tot}= 28mm. This means that the expansion joint has a total movement value of 28 mm (= +/- 14 mm).