

**EXHAUST
COMPENSATORS**



STAINLESS STEEL COMPENSATORS

EXHAUST COMPENSATORS

Stainless steel compensators are used in appliances, machines, apparatus and pipe systems where space is restricted:

- To compensate for movement
- To compensate for expansion
- To reduce tension
- To absorb noise and oscillation transmission
- To compensate for ground and foundation settlement
- As adapters to compensate for installation inaccuracies
- As dismantling pieces for fittings stainless steel compensators are



flexible pipe connection elements and are used in a variety of industrial applications:

- Machine engineering
- Domestic industry
- Chemical industry
- Process plant engineering
- Gas and water supply
- Exhaust technology

STAINLESS STEEL BELLOWS

Structure

Axces stainless steel bellows are available in a variety of structures and versions. The steel bellows is the flexible element of every compensator. It must fulfil the requirement for good movability with simultaneous pressure resistance.

Variable parameters (wall thickness, number of plies, convolution geometry, number of convolutions) determine the pressure resistance, movement absorption and spring rate (self-resisting force) of the bellows. One-ply, two-ply and multiply bellows are manufactured from various materials with different wall thicknesses. The calculation methods ascertain the stability limits. The ability to withstand buckling is the prime criterion for smaller bellows diameters, whereas in larger bellows diameters it is convolution stability.

Material qualities

Axces compensator bellows are manufactured from top quality sheet metal. Different material qualities are used to cover the many operating conditions in various industrial applications. The outstanding characteristic of the steels and alloys is their particular resistance to chemically aggressive liquid media. Please ask our Technical Consulting Service for detailed information about the media resistance of individual materials.

RATING & SERVICE LIFE

Stainless steel bellows, as a rule, are rated for a temperature of +20 °C, the nominal pressure and a load of 1000 load cycles. One load cycle refers to the procedure beginning at zero position, from where the compensator moves to the maximum elongation (positive) position, back through the zero position to the maximum compression (negative) position, and back to the zero position.

Together with the tolerable operating conditions.

- Pressure
- Temperature
- Movement
- Number of load cycles

The following parameters can also influence the service life of compensators:

- Corrosion
- High-frequency oscillations
- Sympathetic vibration
- Pressure shocks
- Temperature shocks
- Incorrect installation

Corrosion can be caused by incorrect selection or combination of materials, conveyance of aggressive media and inappropriate cleaning with chemical agents.

High-frequency oscillations and sympathetic vibration must be avoided by all means, because this will result in fatigue failure/fracture.

Pressure and temperature shocks must be avoided. It is important not to exceed the permitted maximum values.

Incorrect installation can be prevented by compliance with the installation and assembly instructions. In the case of unrestrained compensators, the absence of fixed points can cause the pipeline to shift. This usually destroys the compensator.



Lifetime of compensators.

CONNECTION PARTS

Axces steel compensators are supplied ready for installation. They are connected to pipes and fittings, by flanges, welding ends or threaded connections. The connections are standardized to fit commercially available flanges, threads and pipes.

Flanges

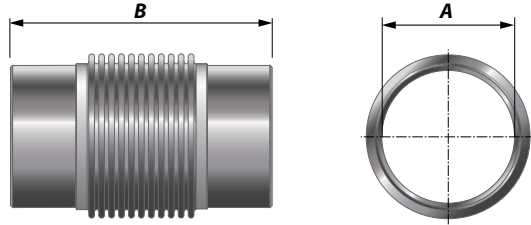
Stainless steel compensators can be supplied with rotating flanges or fixed flanges.

Standard flanges are drilled in accordance to DIN2573 PN6. Standard screws can be used because the flanges are drilled for standard bolts. Other flange connections under DIN, ANSI, JIS are also available.



TYPE AC13

Compensators with welded ends



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
331085195015	1.5	40	48.3	195	35	18
331085195020	2	50	60.3	195	35	18
331085210025	2.5	65	76.1	210	38	16
331085250030	3	80	88.9	250	32	22
331085290040	4	100	114.3	290	32	28
331085305050	5	125	139.7	305	32	22
331085305060	6	150	168.3	305	32	20
331085310080	8	200	219.1	310	32	16
331085320100	10	250	273.0	320	40	17
331085320120	12	300	323.9	320	40	15
331085330140	14	350	355.6	330	40	14
331085340160	16	400	406.4	340	64	13
331085340180	18	450	457.2	340	64	11
331085340200	20	500	508.0	340	64	10
331085350240	24	600	609.6	350	64	9

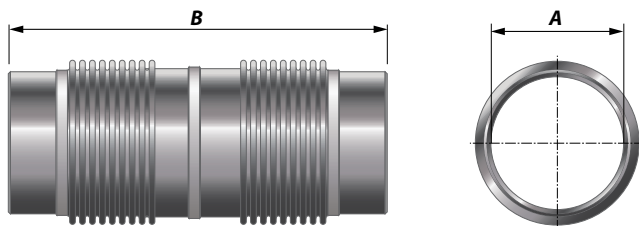


CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550 °C
- ✓ Carbon steel welded ends
- ✓ All are stock items
- ✓ Standard length

TYPE AC14

Double Compensators with welded ends



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
331285400030	3	80	88.9	400	80	35
331285400040	4	100	114.3	400	69	40
331285400050	5	125	139.7	400	70	60
331285500060	6	150	168.3	500	75	70
331285500080	8	200	219.1	500	75	70
331285500100	10	250	273.0	500	55	32
331285500120	12	300	323.9	500	64	43
331285500140	14	350	355.6	500	64	39
331285600160	16	400	406.4	600	90	75
331285600180	18	450	457.2	600	90	69
331285600200	20	500	508.0	600	90	62
331285600240	24	600	609.6	600	90	52
331285600280	28	700	711.2	600	90	45
331285600320	32	800	812.8	600	90	39
331285600360	36	900	914.4	600	90	35
331285600400	40	1000	1016.0	600	90	31

*Movements (axial/lateral) are not in combination.

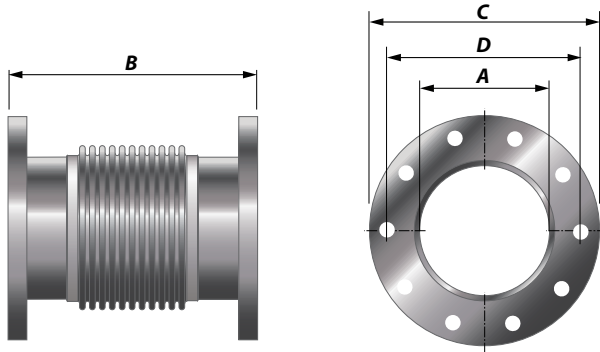


CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ Twin bellows construction
- ✓ Carbon steel weld ends
- ✓ All are stock items
- ✓ Long length

TYPE AC15

Compensators with rotatable flanges PN6



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	C O.D. (mm)	Flange		Movements*	
						Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331405195015	1.5	40	48.3	195	130	4 x 14	100	35	18
331405195020	2	50	60.3	195	140	4 x 14	110	35	18
331405210025	2.5	65	76.1	210	160	4 x 14	130	38	16
331405250030	3	80	88.9	250	190	4 x 18	150	32	22
331405290040	4	100	114.3	290	210	4 x 18	170	32	28
331405305050	5	125	139.7	305	240	8 x 18	200	32	22
331405305060	6	150	168.3	305	265	8 x 18	225	32	20
331405310080	8	200	219.1	310	320	8 x 18	280	32	16
331405320100	10	250	273.0	320	375	12 x 18	335	40	17
331405320120	12	300	323.9	320	440	12 x 22	395	40	15
331405330140	14	350	355.6	330	490	12 x 22	445	40	14
331405340160	16	400	406.4	340	540	16 x 22	495	64	13
331405340180	18	450	457.2	340	595	16 x 22	550	64	11
331405340200	20	500	508.0	340	645	20 x 22	600	64	10
331405350240	24	600	609.6	350	755	20 x 26	705	64	9

*Movements (axial/lateral) are not in combination.

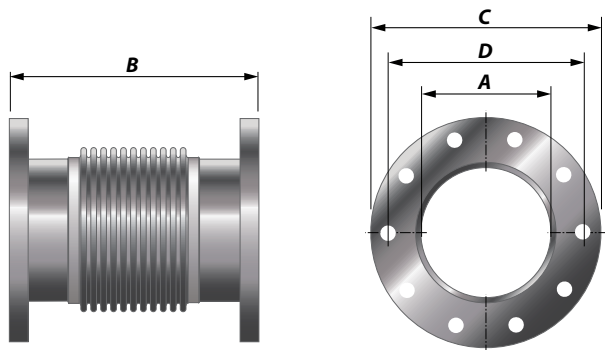


CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 2573 - PN6
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550 °C
- ✓ All are stock items
- ✓ Standard length

TYPE AC16

Compensators with rotatable flanges PN10



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	C O.D. (mm)	Flange		Movements*	
						Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331415195015	1.5	40	48.3	195	150	4 x 18	110	35	18
331415195020	2	50	60.3	195	165	4 x 18	125	35	18
331415210025	2.5	65	76.1	210	185	4 x 18	145	38	16
331415250030	3	80	88.9	250	200	8 x 18	160	32	22
331415290040	4	100	114.3	290	220	8 x 18	180	32	28
331415305050	5	125	139.7	305	250	8 x 18	210	32	22
331415305060	6	150	168.3	305	285	8 x 22	240	32	20
331415310080	8	200	219.1	310	340	8 x 22	295	32	16
331415320100	10	250	273.0	320	395	12 x 22	350	40	17
331415320120	12	300	323.9	320	445	12 x 22	400	40	15
331415330140	14	350	355.6	330	505	16 x 22	460	40	14
331415340160	16	400	406.4	340	565	16 x 26	515	64	13
331415340180	18	450	457.2	340	615	20 x 26	565	64	11
331415340200	20	500	508.0	340	670	20 x 26	620	64	10
331415350240	24	600	609.6	350	780	20 x 30	725	64	9

*Movements (axial/lateral) are not in combination.

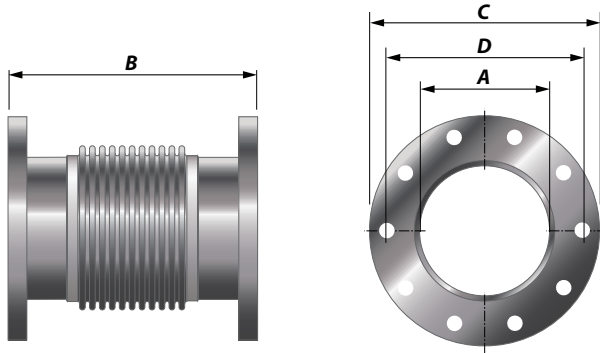


CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 2576 - PN10
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550 °C
- ✓ All are stock items
- ✓ Standard length

TYPE AC17

Compensators with rotatable flanges DIN86044



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	C O.D. (mm)	Flange		Movements*	
						Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
33145195015	1.5	40	48.3	195	130	4 x 14	100	35	18
331405195020	2	50	60.3	195	140	4 x 14	110	35	18
331405210025	2.5	65	76.1	210	160	4 x 14	130	38	16
331405250030	3	80	88.9	250	190	4 x 18	150	32	22
331405290040	4	100	114.3	290	210	4 x 18	170	32	28
331405305050	5	125	139.7	305	240	8 x 18	200	32	22
331405305060	6	150	168.3	305	265	8 x 18	225	32	20
331405310080	8	200	219.1	310	320	8 x 18	280	32	16
331405320100	10	250	273.0	320	375	12 x 18	335	40	17
331405320120	12	300	323.9	320	440	12 x 22	395	40	15
331405330140	14	350	355.6	330	490	12 x 22	445	40	14
331405340160	16	400	406.4	340	540	16 x 22	495	64	13
331405340180	18	450	457.2	340	595	16 x 22	550	64	11
331405340200	20	500	508.0	340	645	20 x 22	600	64	10
331405350240	24	600	609.6	350	755	20 x 26	705	64	9

*Movements (axial/lateral) are not in combination.

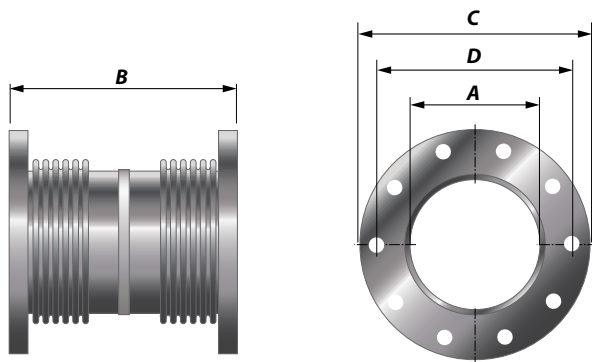


CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 86044
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ All are stock items
- ✓ Standard length

TYPE AC18

Double Compensators with rotatable flanges PN6



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331605400030	3	80	88.9	400	200	8 x 18	160	80	35
331605400040	4	100	114.3	400	220	8 x 18	180	69	40
331605400050	5	125	139.7	400	250	8 x 18	210	70	60
331605500060	6	150	168.3	500	285	8 x 22	240	75	70
331605500080	8	200	219.1	500	320	8 x 18	280	75	70
331605500100	10	250	273.0	500	375	12 x 18	335	55	32
331605500120	12	300	323.9	500	440	12 x 22	395	64	43
331605500140	14	350	355.6	500	490	12 x 22	445	64	39
331605600160	16	400	406.4	600	540	16 x 22	495	90	75
331605600180	18	450	457.2	600	595	16 x 22	550	90	69
331605600200	20	500	508.0	600	645	20 x 22	600	90	62
331605600240	24	600	609.6	600	754	20 x 22	700	90	52
331605600280	28	700	711.2	600	856	24 x 22	800	90	45
331605600320	32	800	812.8	600	958	24 x 22	900	90	39
331605600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331605600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

*Movements (axial/lateral) are not in combination.

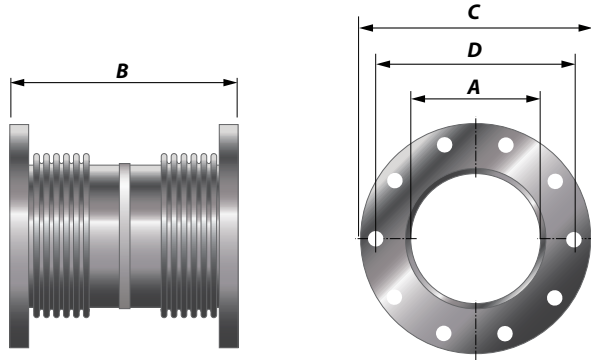


CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN2573 - PN6
- ✓ Supplied at pre-stressed length
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC19

Double Compensators with rotatable flanges PN10



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	C O.D. (mm)	Flange		Movements*	
						Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331615400030	3	80	88.9	400	200	8 x 18	160	80	35
331615400040	4	100	114.3	400	220	8 x 18	180	69	40
331615400050	5	125	139.7	400	250	8 x 18	210	70	60
331615500060	6	150	168.3	500	285	8 x 22	240	75	70
331615500080	8	200	219.1	500	320	8 x 18	280	75	70
331615500100	10	250	273.0	500	375	12 x 18	335	55	32
331615500120	12	300	323.9	500	440	12 x 22	395	64	43
331615500140	14	350	355.6	500	490	12 x 22	445	64	39
331615600160	16	400	406.4	600	540	16 x 22	495	90	75
331615600180	18	450	457.2	600	595	16 x 22	550	90	69
331615600200	20	500	508.0	600	645	20 x 22	600	90	62
331615600240	24	600	609.6	600	754	20 x 22	700	90	52
331615600280	28	700	711.2	600	856	24 x 22	800	90	45
331615600320	32	800	812.8	600	958	24 x 22	900	90	39
331615600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331615600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

*Movements (axial/lateral) are not in combination.

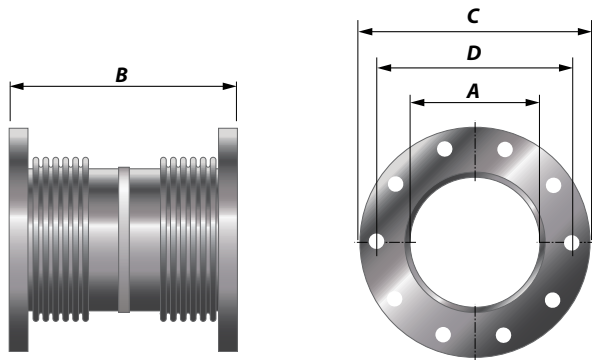


CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN2573 - PN10
- ✓ Supplied at pre-stressed length
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC20

Double Compensators with rotatable flanges DIN86044



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331625400030	3	80	88.9	400	200	8 x 18	160	80	35
331625400040	4	100	114.3	400	220	8 x 18	180	69	40
331625400050	5	125	139.7	400	250	8 x 18	210	70	60
331625500060	6	150	168.3	500	285	8 x 22	240	75	70
331625500080	8	200	219.1	500	320	8 x 18	280	75	70
331625500100	10	250	273.0	500	375	12 x 18	335	55	32
331625500120	12	300	323.9	500	440	12 x 22	395	64	43
331625500140	14	350	355.6	500	490	12 x 22	445	64	39
331625600160	16	400	406.4	600	540	16 x 22	495	90	75
331625600180	18	450	457.2	600	595	16 x 22	550	90	69
331625600200	20	500	508.0	600	645	20 x 22	600	90	62
331625600240	24	600	609.6	600	754	20 x 22	700	90	52
331625600280	28	700	711.2	600	856	24 x 22	800	90	45
331625600320	32	800	812.8	600	958	24 x 22	900	90	39
331625600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331625600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

*Movements (axial/lateral) are not in combination.

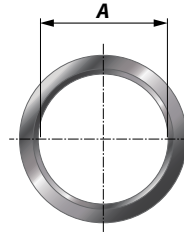
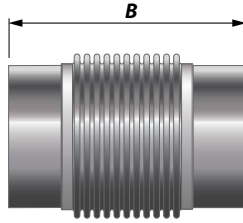


CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN 86044
- ✓ Supplied at pre-stressed length
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC21

Compensators with stainless steel welded ends



Article No.	A Size (inch)	NB (mm)	Pipe (mm)	B (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
322085160015	1.5	40	48.3	245	24	18
322085160012	2	50	60.3	245	30	18
322085160025	2.5	65	76.1	245	32	16
322085160030	3	80	88.9	245	20	22
322085160040	4	100	114.3	245	38	28
322085160050	5	125	139.7	245	38	22
322085160060	6	150	168.3	245	37	20
322085160080	8	200	219.1	245	38	16
322085160100	10	250	273.0	245	±38	17

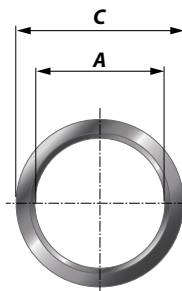
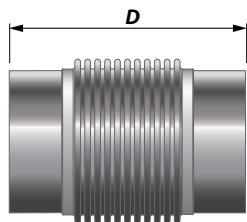


CHARACTERISTICS

- ✓ Stainless steel expansion joint: AISI321
- ✓ **Stainless steel welded ends**
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ All are stock items
- ✓ Standard length

TYPE AC22

Compact Compensators with welded ends



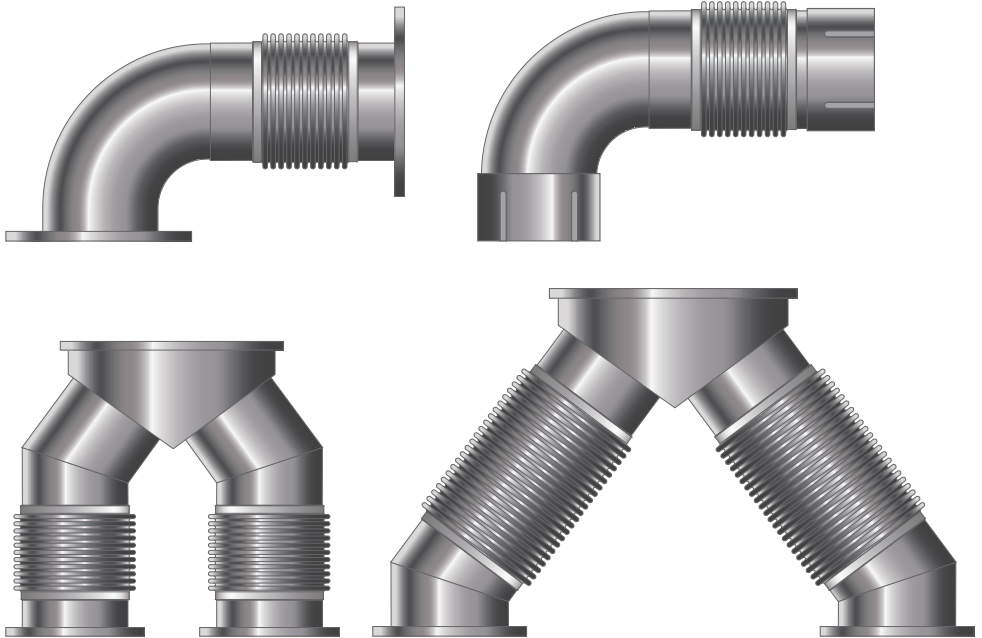
Article No.	A Size (inch)	NB (mm)	Pipe (mm)	D (mm)	C (mm)	Movements		Springrate	
						Axial ± (mm)	Lateral ± (mm)	Axial ± (mm)	Lateral ± (mm)
322085150015	1.5	40	48.3	150	60.3	25	8	47	89
322085150020	2	50	60.3	150	78.3	25	8	68	166
322085150025	2.5	65	76.1	150	96.7	25	8	56	169
322085150030	3	80	88.9	150	109.7	25	8	63	219
322085150040	4	100	114.3	150	140.5	25	6	59	293
322085150050	5	125	139.7	150	165.7	25	5	71	420
322085150060	6	150	168.3	150	200.5	25	5	56	389
322085150080	8	200	219.1	150	251.1	25	5	69	608
322085150100	10	250	273.0	150	305.2	25	4	86	933
322085150120	12	300	323.9	150	360.9	25	4	81	1042



CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double ply bellows material
- ✓ Max. temperature: 550°C
- ✓ Carbon steel weld ends
- ✓ All are stock items
- ✓ Compact Line

CUSTOM MADE COMPENSATORS



Custom made compensators are available in every shape, with or without flange in sizes ranging from 4 to 40 inch.

CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double ply bellows material
- ✓ Max. temperature: 550°C
- ✓ Carbon steel weld ends

