

# SJT series METAL EXPANSION JOINT



# SJT<sub>series</sub>

## METAL EXPANSION JOINT

### FEATURES

- Bellow Expansion Joints are employed in piping systems to absorb differential thermal expansion while containing the system pressure.
- Size is available from 25A (1") to 4000A (160").
- Typical working pressure varies from full vacuum to 1000 psig (66 bar) and temperature from -420°F (-215°C) to 1800°F (982°C) that refer from EJMA Organization.
- Standard design of movement and material maximizes the productivity while the custom design maximizes the suitability for special applications.
- Computer designed bellows element complies with EJMA criteria.
- All products are tested before delivery according to relevant code or ISO quality control system.

### APPLICATION

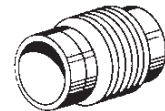
- Bellows type metal Expansion Joints are successfully utilized in refineries, chemical plants, fossil and nuclear power systems, heating and cooling system, and cryogenic plants.

### DEFINITION & TYPE OF EXPANSION JOINT

*EXPANSION JOINT* is any device containing one or more bellows used to absorb dimensional changes, such as those caused by thermal expansion or contraction of a pipeline, duct or vessel.

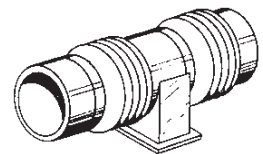
#### SINGLE EXPANSION JOINT

The simplest form of Expansion Joint, of single bellows construction, for the purpose of absorbing any combination of the three basic movements of the pipe section in which it is installed.



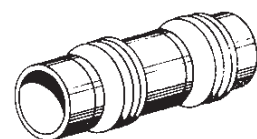
#### DOUBLE EXPANSION JOINT

A double Expansion Joint consists of two bellows joined by a common connector which is anchored to some rigid part of the installation by means of an anchor base. The anchor base may be attached to the common connector either at installation or at time of manufacture. Each bellows acts as a single Expansion Joint and absorbs the movement of the pipe section in which it is installed independently of the other bellows. Double Expansion Joints should not be confused with universal Expansion Joints.



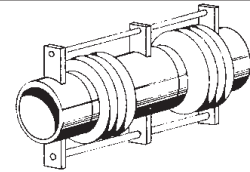
#### UNIVERSAL EXPANSION JOINT

A universal Expansion Joint is one containing two bellows joined by a common connector for the purpose of absorbing any combination of the three basic movements: axial movement, lateral deflection and angular rotation. Universal Expansion Joints are usually furnished with control rods to distribute the movement between the two bellows of the Expansion Joint and stabilize the common connector. This definition does not imply that only a universal Expansion Joint can absorb combined movement.



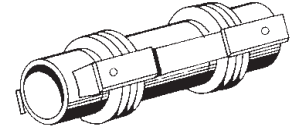
### UNIVERSAL TIED EXPANSION JOINT

The tied universal Expansion Joints are used when it is necessary for the assembly to eliminate pressure thrust forces from the piping system. In this case the Expansion Joint will absorb lateral movement and will not absorb any axial movement external to the tied length.



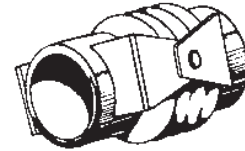
### SWING EXPANSION JOINT

A swing Expansion Joint is one containing two bellows joined by a common connector designed to absorb lateral deflection and/or angular rotation in one plane. Pressure thrust and extraneous forces are restrained by the use of a pair of swing bars, each of which is pinned to the Expansion Joint ends.



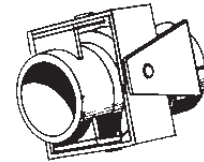
### HINGED EXPANSION JOINT

A hinged Expansion Joint contains one bellows and is designed to permit angular rotation in one plane only by the use of a pair of pins through hinge plates attached to the Expansion Joint ends. The hinges and hinge pins must be designed to restrain the thrust of the Expansion Joint due to internal pressure and extraneous forces, where applicable. Hinged Expansion Joints should be used in sets of two or three to function properly.



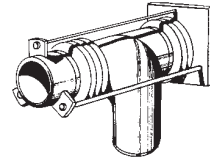
### GIMBAL EXPANSION JOINT

A gimbal Expansion Joint is designed to permit angular rotation in any plane by the use of two pairs of hinges affixed to a common floating gimbal ring. The gimbal ring, hinges and pins must be designed to restrain the thrust of the Expansion Joint due to internal pressure and extraneous forces, where applicable.



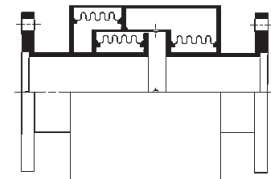
### PRESSURE BALANCED EXPANSION JOINT

A pressure balanced Expansion Joint is designed to absorb axial movement and/or lateral deflection while restraining the pressure thrust by means of tie devices interconnecting the flow bellows with an opposed bellows also subjected to line pressure.



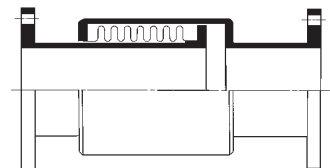
### IN-LINE PRESSURE BALANCED EXPANSION JOINT

An in-line pressure balanced Expansion Joint is designed to absorb axial movement and/or lateral deflection while restraining the pressure thrust by means of tie devices interconnecting the line bellows with outboard compensating bellows also subjected to line pressure. Each bellows set is designed to absorb the axial movement and usually the line bellows will absorb the lateral deflection. This type of Expansion Joint is used in a straight run of piping.



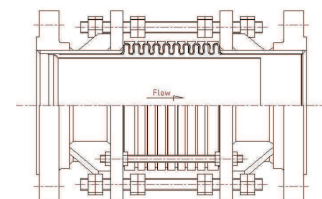
### EXTERNAL PRESSURIZED EXPANSION JOINT

The external pressurized Expansion Joint is designed so that the pressure is external to the bellows whilst the inside is at atmospheric pressure and it has many convolutions to allow a large amount of axial movement. But under external pressure the bellows will retain its shape completely stable. Besides external pressurized bellows is protected from external damage by a heavy wall shroud and is isolated from flow impingement by an internal sleeve.



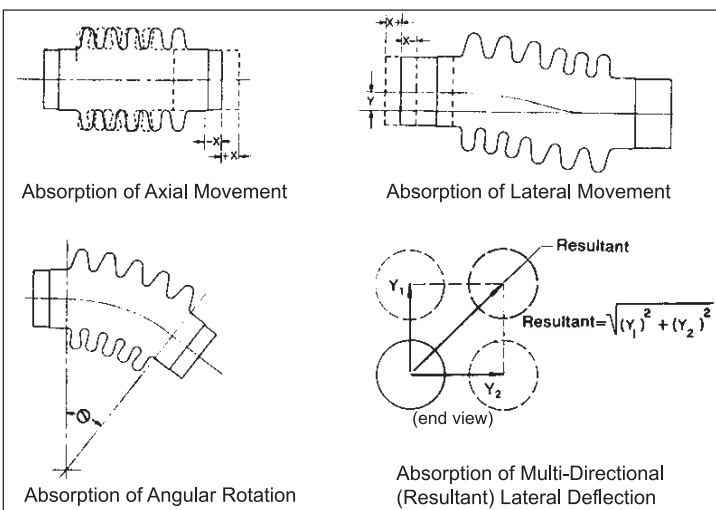
### EXPANSION JOINT WITH REINFORCING RING

Devices used on some expansion joints fitting snugly in the roots of the convolutions. The primary purpose of these devices is to reinforce the bellows against internal pressure. Equalizing rings are made of cast iron, steel, stainless steel or other suitable alloys and are approximately "T" shaped in cross section. Reinforcing or roots rings are fabricated from tubing or solid round bars of carbon steel, stainless steel or other suitable alloys.





## MOTION

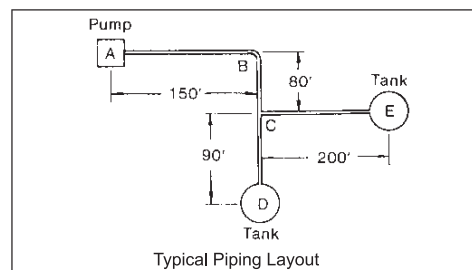


**Note :** Expansion Joint is not suitable for torsion or twisting movement, because such movement produces extremely high shear stresses in the bellows.

## SYSTEM PREPARATION

### 1) Simplify the system

Survey piping system and major equipment such as turbines, pumps, compressors, fan, etc. Check the length of piping which will expand to the system.



### 2) Calculating thermal growth

Determining thermal movement.

$\beta \Delta t$  (Unit : mm)

Temperature changes °C	Carbon Steel SGP, STPG, STPT, STPY, STPA22 less than 3CrMo	Alloy Steel 5 CrMo to 9 CrMo	Austenitic Stainless Steel 18Cr8Ni	Copper (CuZn)	Aluminium
-198	-1.782	-1.675	-2.905	-2.922	-3.530
-180	-1.651	-1.553	-2.668	-2.675	-3.267
-160	-1.496	-1.410	-2.398	-2.397	-2.965
-140	-1.334	-1.259	-2.122	-2.111	-2.646
-120	-1.165	-1.100	-1.840	-1.824	-2.312
-100	-0.991	-0.937	-1.549	-1.532	-1.965
-80	-0.808	-0.762	-1.254	-1.249	-1.608
-60	-0.617	-0.581	-0.953	-0.954	-1.234
-40	-0.419	-0.394	-0.642	-0.647	-0.839
-20	-0.212	-0.200	-0.323	-0.327	-0.426
0	0.000	0.000	0.000	0.000	0.000
20	0.218	0.206	0.328	0.336	0.441
40	0.442	0.418	0.660	0.679	0.894
60	0.673	0.637	0.997	1.032	1.363
80	0.909	0.862	1.338	1.394	1.846
100	1.153	1.091	1.684	1.762	2.332
120	1.400	1.321	2.032	2.124	2.832
140	1.653	1.554	2.381	2.510	3.333
160	1.917	1.792	2.734	2.894	3.843
180	2.178	2.034	3.091	3.280	4.361
200	2.448	2.278	3.450	3.676	4.886
220	2.724	2.528	3.810	4.077	5.421
240	3.002	2.784	4.174	4.486	5.959
260	3.286	3.042	4.540	4.901	6.505
280	3.576	3.304	4.911	5.317	7.062
300	3.870	3.573	5.286	5.742	7.626
320	4.173	3.843	5.661	6.170	8.179

$$\Delta X = L \times \beta \Delta t$$

$\Delta X$  = Axial Movement (mm)

L = Length of piping (metre)

$\beta \Delta t$  = Thermal Expansion by one metre (mm/m)

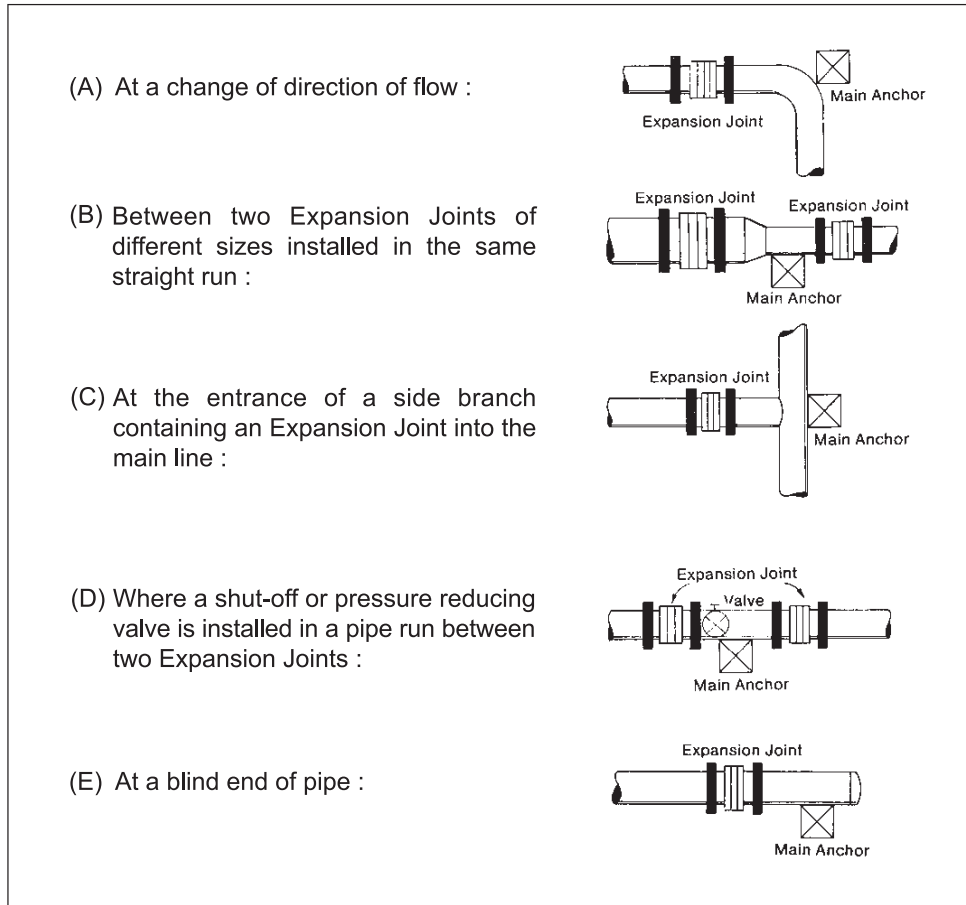


### 3) Pipe anchors and forces

Must be designed to withstand all of the forces acting upon them. Two significant forces which are unique of Expansion Joint system are spring force and pressure thrust force.

#### ● **Main Anchors**

Must be designed to withstand the forces and movements imposed upon it by each of the pipe sections to which it is installed. In systems containing Expansion Joint, main anchors are installed at any of the following locations.

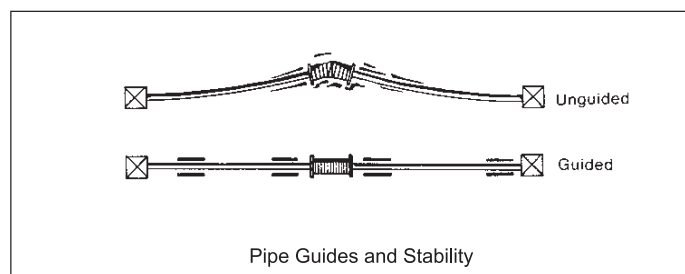


#### ● **Intermediate Anchors**

are not intended to withstand pressure thrust force, but it withstands all of the non-pressure forces such as spring forces and frictional forces in pressure balanced or double Expansion Joint.

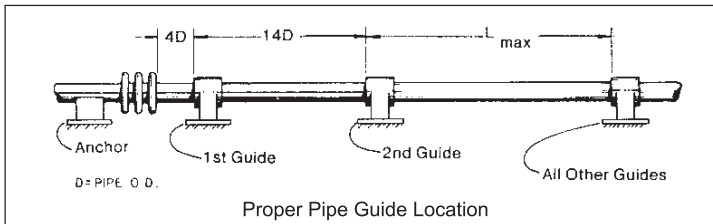
#### ● **Pipe Guide and Support**

Pipe Guides are necessary to insure proper alignment of movement to the Expansion Joint and to prevent buckling of the line.



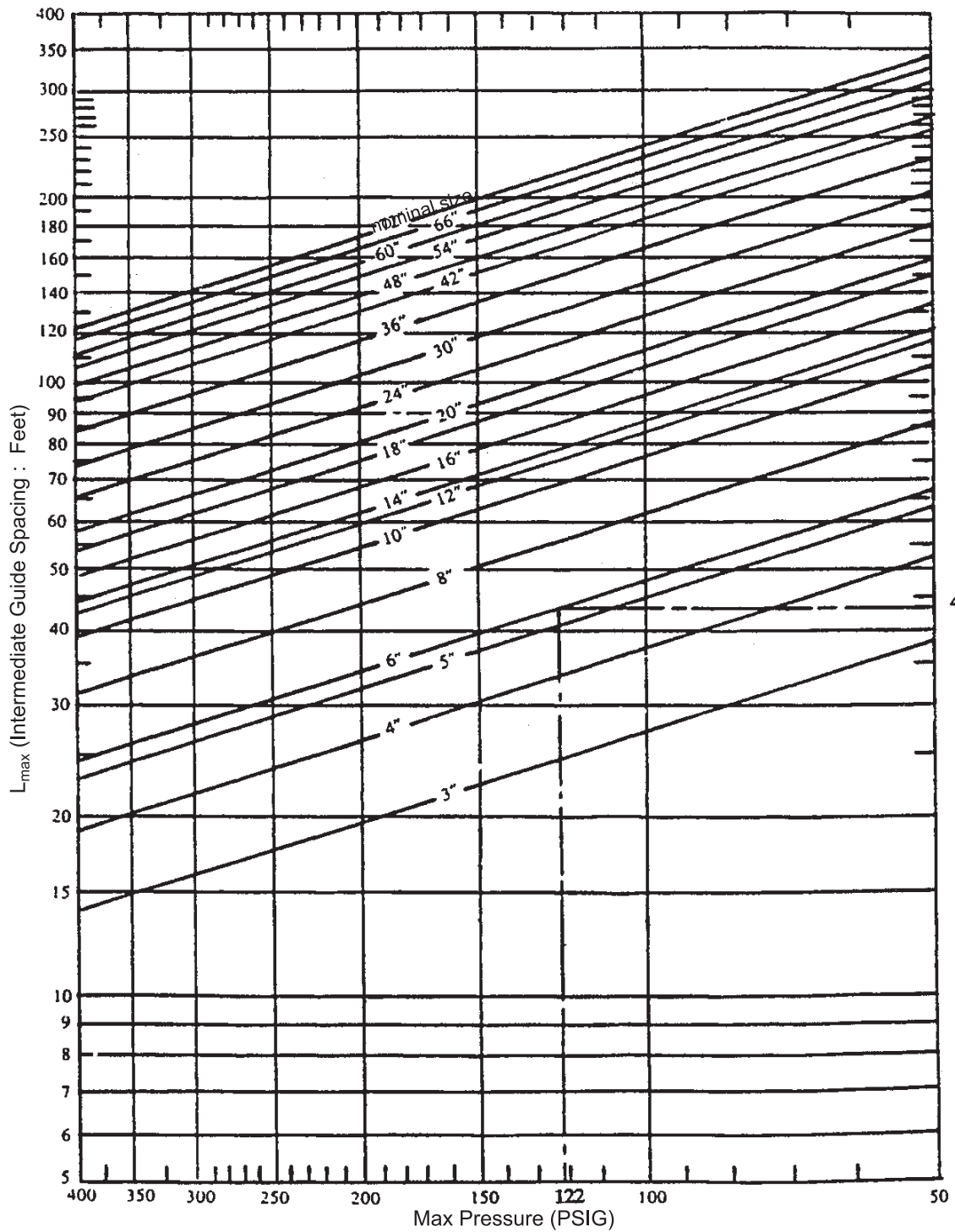
● **Pipe Guide Application**

Generally recommended that the Expansion Joint is located near an anchor, and any other guides should determine the position like below figure.




D = Nominal diameter of pipe

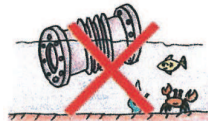
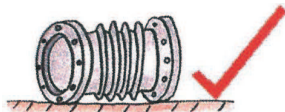
L<sub>max</sub> = see below graph



## Guide for storage and installation

1)  Inspect damage such as dent, burr, broken, etc.

2) Store in the clean and dry area. Don't expose the joint in hazardous or corrosive environment.



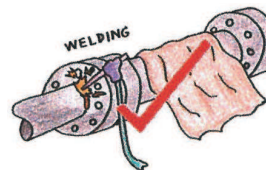
3) Never use chains or other devices directly on the bellows.



4) Don't use cleaning agents which contain chlorides.



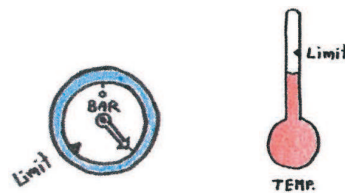
5) Don't drop or strike Expansion Joint and beware bellows when you have welding process.




6) Don't force or rotate one end of an Expansion Joint for alignment of bolt holes because torsions may damage the joint.

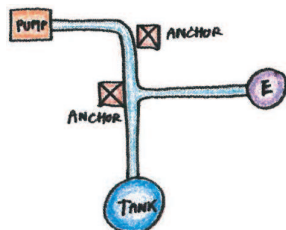


7) Check working pressure & working temperature do not exceed the limited.

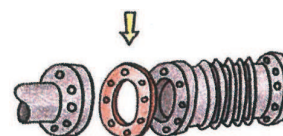


8) Check the corrective of flow direction (see arrow mark)  with fluid flow.

9) Check for adequate anchor and guide support for the system.



10) Insert gasket between Expansion Joint and counter flange.



11) Remove shipping bar after installation completed.



**Note :** Don't use shipping bars to restrain the pressure thrust during testing.



## Installation Instruction

### Expansion Joint Installation

The bellows of an Expansion Joint is manufactured from relatively thin material in order to provide the flexibility needed to absorb the specified movement. The life of the Expansion Joint can be shortened if the unit is improperly handled and/or installed. This can arise from direct physical damage to the bellows through stresses imposed during installation, or by other factors. Therefore some basic instructions must be followed having safe and proper installation of Expansion Joints.

### Pipework system design

Tozen strongly recommends that you seek the advice of qualified Pipework engineer on your piping system and Expansion Joint selection. Pipework containing Expansion Joints requires careful anchoring and guiding for the Expansion Joint(s) to operate to their designed capacity.

### Pipe anchors

The function of a pipe anchor is to divide the pipeline into individual expanding sections. Because thermal growth cannot be restrained, it becomes the functions of the anchors to limit and control the amount of movement which Expansion Joints located between these anchors will absorb. Sometimes equipment such as turbines, pump, compressors, heat exchanger, etc. may possibly act as anchors.

### Pipe Guides

Correct alignment of the adjoining Pipework is essential in the proper functioning of an Expansion Joints. Pipe guides are necessary to ensure movement is directed onto the Expansion Joint and also to prevent buckling of the pipeline.

### Receiving Inspection

Upon receipt, identify and inspect the Expansion Joints for any damage that may have occurred in transit. We recommend that the Expansion Joints be stored in a safe area in its original packaging until ready for installation. Contact Tozen immediately if any repairs should be required.

### Installation Guidelines

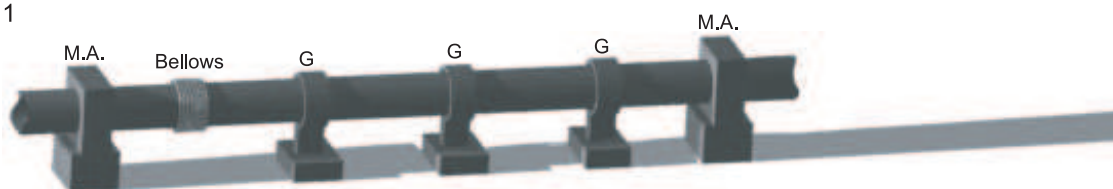
- 1) Anchors, guides, and pipe supports must be installed in strict accordance with the piping system drawing. Any field variances from the planned installation may affect the proper functioning of the Expansion Joint.
- 2) No movement or stresses shall be imposed on Expansion Joint during installation. This may occur through pipe or flange bolt hole misalignment or due to mishandling. The pressure capacity, fatigue life, and stability of the bellow may be diminished, and unanticipated forces may be imposed on the adjacent pipework/or equipment.
- 3) Expansion Joints fitted with a flow liner shall be installed in accordance with the flow arrow given on the Expansion Joint.
- 4) Extreme care shall be taken during unloading and installation to prevent damage. In particular the bellows is readily prone to damage. Such damage may include dent, scores, arc strikes, and weld spatter, all of which may be detrimental to the proper functioning of the Expansion Joint. Protect the bellows with wet, chloride free, insulation blanket during welding installation.
- 5) Shipping bars painted yellow, or shipping rods, must be removed from the Expansion Joint once it is correctly installed, and prior to hydrostatic testing of the system. This will allow the Expansion Joint to move as designed.

### Warranty

Warranty is void if these instructions are not followed.

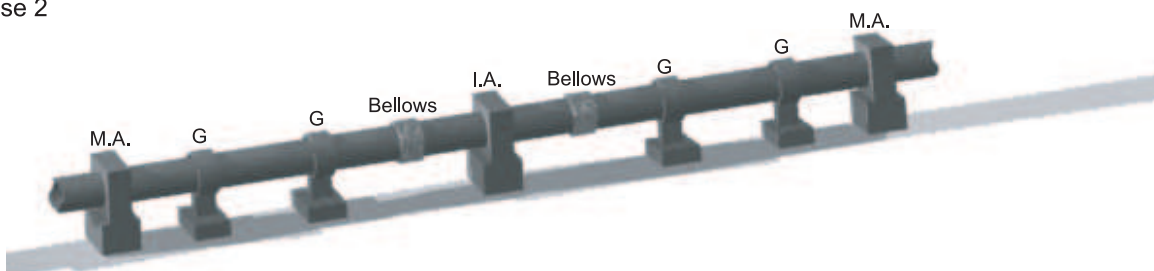
## Case of Installation

Case 1



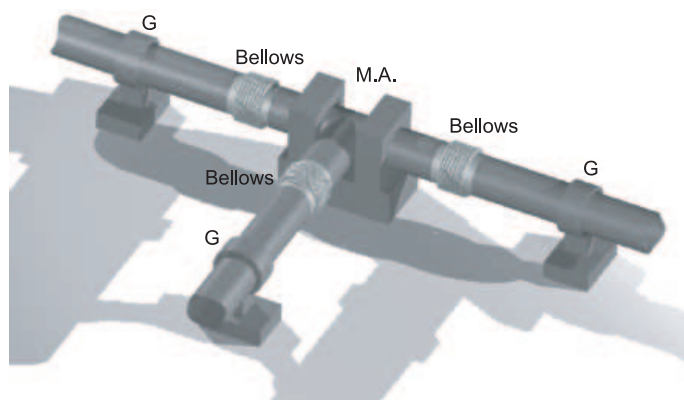
The basic form of single bellows Expansion Joint in a straight line piping between two Main Anchors (M.A.) with support Guides (G).

Case 2



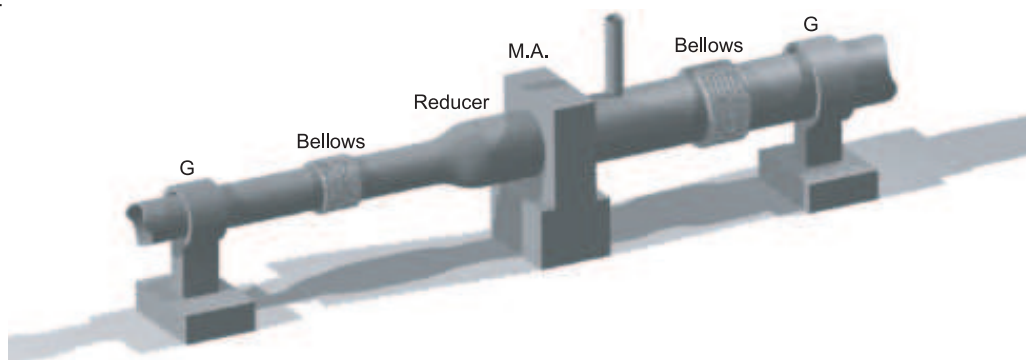
Universal or double bellows Expansion Joint in straight line piping between two Main Anchors and Intermediate Anchors (I.A.) at middle line with support Guides installed.

Case 3



Case of Installation : Expansion Joint at the entrance of a side branch piping.

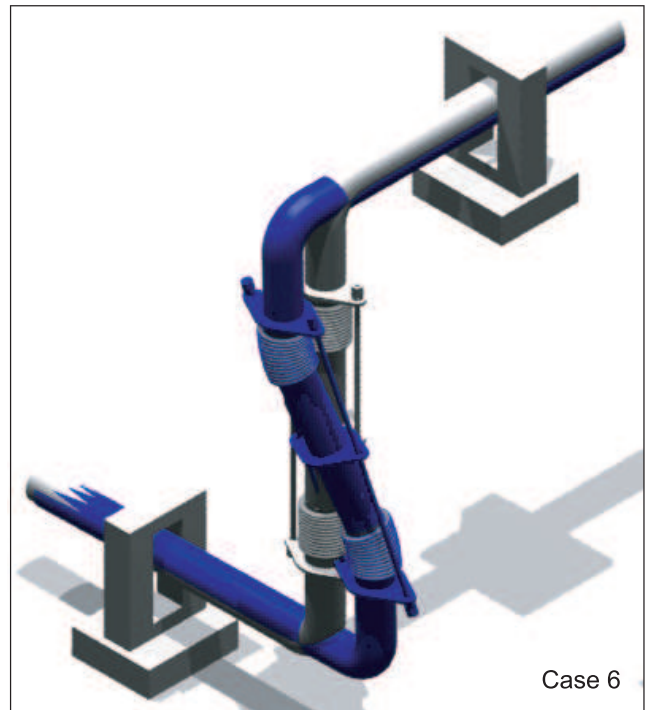
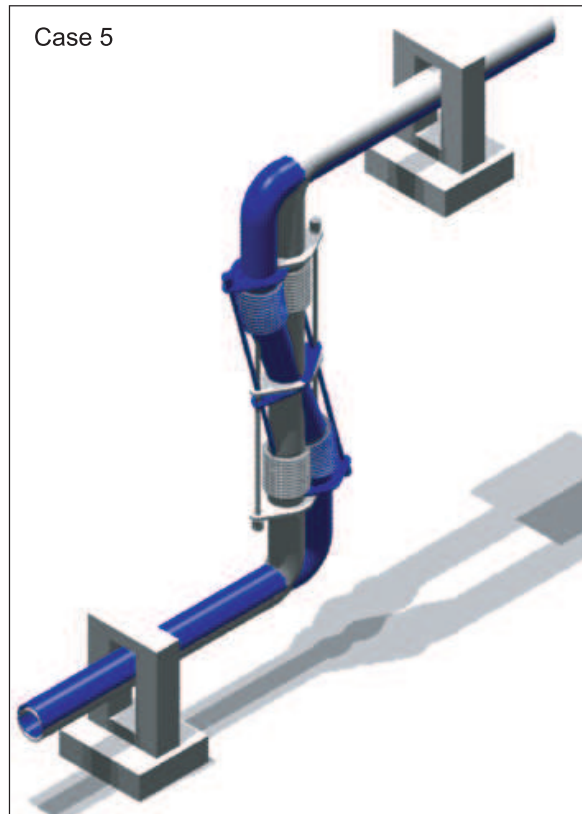
Case 4



Case of Installation : Expansion Joint between two pipes of different sizes in straight line.

Case 5, 6, 7

Which the system have not the main anchors and have free area for distortion.





# Expansion Joint Inquiry Sheet



Customer					Date:	
Project					Prepared by:	
Inquiry For	Cost	Tag Number:				
	Drawing	Quantity:	Set(s)	Set(s)	Set(s)	Set(s)
	Revision	Expansion Joint Type				
Dimensions		Size				
		Overall Length	mm.	mm.	mm.	mm.
Materials		Bellows				
		Liner (Inner sleeve)				
		Cover				
End Connections	Pipe	OD	mm.	mm.	mm.	mm.
		Thickness	mm.	mm.	mm.	mm.
		Material				
	Flange	Flange Standard				
		Material				
Pressure		Design	Bar	Bar	Bar	Bar
		Operating	Bar	Bar	Bar	Bar
		Test	Bar	Bar	Bar	Bar
Temperature		Design	°C	°C	°C	°C
		Operating	°C	°C	°C	°C
		Test	°C	°C	°C	°C
Media		Media (Fluid)				
		Flow Velocity				
		Flow Direction				
Movements And Life Cycle	Design	Axial Extension	mm.	mm.	mm.	mm.
		Axial Compression	mm.	mm.	mm.	mm.
		Lateral	mm.	mm.	mm.	mm.
		Angular	°	°	°	°
		Number of Cycles				
	Operating	Axial Extension	mm.	mm.	mm.	mm.
		Axial Compression	mm.	mm.	mm.	mm.
		Lateral	mm.	mm.	mm.	mm.
		Angular	°	°	°	°
		Number of Cycles				
Maximum Spring Rates		Axial Spring Rate	N/mm	N/mm	N/mm	N/mm
		Lateral Spring Rate	N/mm	N/mm	N/mm	N/mm
		Angular Spring Rate	N/°	N/°	N/°	N/°
Control Unit Requirement		Tie Rod, Limit Rod, Shipping Rod, etc.				
Support Documents Requirement		Test Certificate, Material Certificate				
Other Requirement						

# Classification of STAINLESS STEEL

SJT -

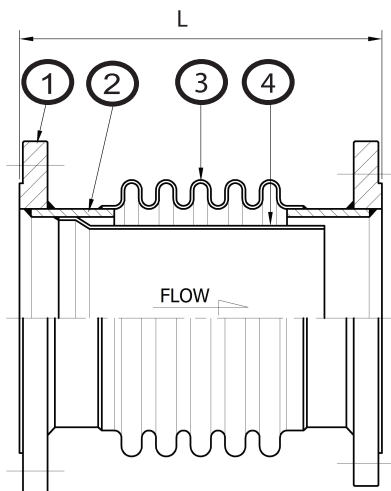
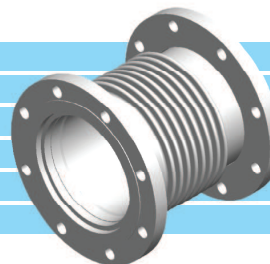
BELLOW	MATERIAL OF CONNECTION	STANDARD OF FLANGE	TYPE OF FLANGE
1 Single	1 All SUS304	1 JIS10K	(none) Both Ends Fixed Flanges
2 Double	2 SS400(Dry Part + SUS304 (Wet Part))	2 JIS20K	FL Fixed x Loose Flanges
0 Others	3 All SUS316	3 ANSI150LB	LL Both Ends Loose Flanges
	4 SS400(Dry Part + SUS316 (Wet Part))	4 ANSI300LB	BB Both Ends Pipe
	5 All Steel	5 PN10	FB Fixed Flange x End Pipe
	6 SUS304(Dry Part + SUS316 (Wet Part))	6 PN16	LB Loose Flange x End Pipe
	0 Others	7 PN25	O Others
		0 Others	

COMBINATION	MATERIAL OF BELLOWS	SPECIAL CASE
1 Axial Free Type	(none) SUS304	(none) with Shipping Rods
2 Axial Covered Type	316 SUS316	NS No Inner Sleeve
3 Axial Reinforced Type	316L SUS316L	LR with Limit Rod
4 External Pressurised Type	316Ti SUS316Ti	VS Vanstone Type
5 Hinged Type	--- Others (specify)	NP No Pipe
6 Gimbal Type		--- Others
7 Universal Type		
8 Tied Type		
9 Pressure Balanced Type		
0 Others		

# SJT1100

## STAINLESS STEEL EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	1	Bellows	SUS304
4	1	Internal Sleeve	SUS304

SJT-1101,1103,1105 10 bars (150 PSI)

SJT-1102,1104 20 bars (300 PSI)

SJT1106 16 bars (232 PSI)

SJT1107 25 bars (360 PSI)

<b>Design Working Pressure</b>	10-25 Bar (150-360 PSI)
<b>Design Working Temperature</b>	250°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

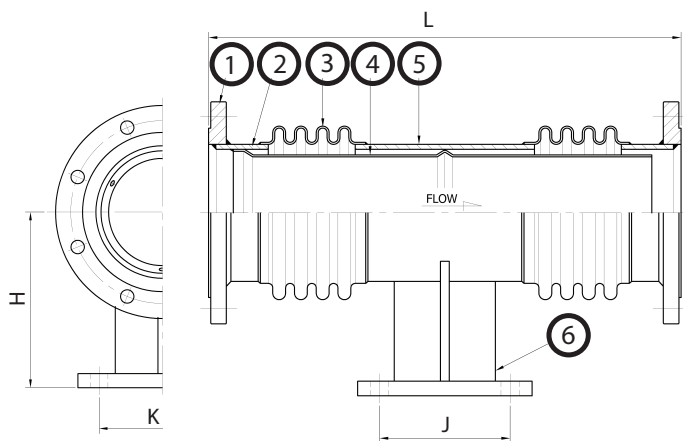
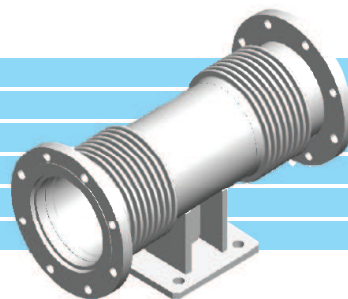
- Please consult us for other material, temperature and movement designs
- Shipping devices (yellow sticker) must be removed prior to start-up or testing the system.

Size	L (mm)	Design Pressure (Bar)	Design Temperature (Deg.C)	Axial Movement (mm)	Axial Spring Rate (N/mm)	Effective Area (cm <sup>2</sup> )	Mass(kg)	
							Pipe End	Flange End
40A	250	10	250	25	60	24	1	4
50A	250	10	250	25	78	37	1	5
65A	250	10	250	35	97	51	2	8
80A	250	10	250	35	87	80	2	10
100A	275	10	250	35	105	131	4	14
125A	275	10	250	35	101	198	5	17
150A	300	10	250	35	136	265	7	21
200A	300	10	250	35	166	440	9	32
250A	350	10	250	35	169	679	13	43
300A	350	10	250	35	182	951	18	65
350A	350	10	250	35	291	1148	22	84
400A	350	10	250	35	327	1474	26	106
450A	375	10	250	35	312	1852	36	123
500A	375	10	250	35	341	2261	42	153
600A	375	10	250	35	474	3263	62	216



# SJT1200

## STAINLESS STEEL EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	1	Bellows	SUS304
4	1	Internal Sleeve	SUS304
5	1	Middle Pipe	CS
6	1	Anchor Base	SS400

SJT-1201,1203,1205 10 bars (150 PSI)  
 SJT-1202,1204 20 bars (300 PSI)  
 SJT-1206 16 bars (232 PSI)  
 SJT-1207 25 bars (360 PSI)

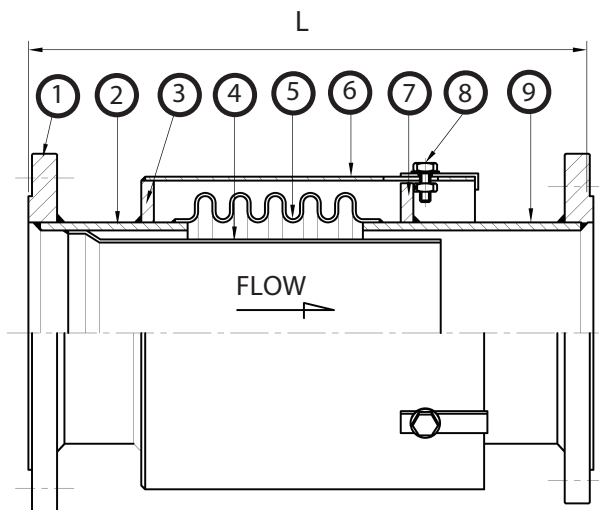
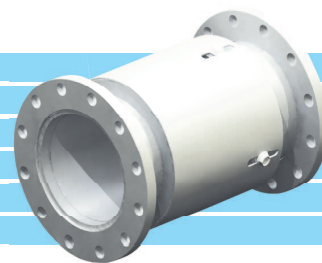
<b>Design Working Pressure</b>	10-25 Bar (150-360 PSI)
<b>Design Working Temperature</b>	250°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- Please consult us for other material, temperature and movement designs
- Shipping devices (yellow sticker) must be removed prior to start-up or testing the system.

Size	L (mm)	H	J	K	Ød	Design Pressure	Design Temperature	Axial Movement (mm)	Axial Spring Rate (N/mm)	Effective Area (cm <sup>2</sup> )	Mass (kg)	
											Pipe End	Flange End
40A	450	120	100	70	12	10	250	50	30	24	3	6
50A	470	130	100	80	15	10	250	50	39	37	4	9
65A	570	140	120	100	15	10	250	70	49	51	7	13
80A	570	150	120	110	15	10	250	70	43	80	8	16
100A	570	170	120	130	19	10	250	70	53	131	11	21
125A	600	200	120	150	19	10	250	70	50	198	17	28
150A	650	220	160	180	23	10	250	70	68	265	23	36
200A	650	250	160	220	25	10	250	70	83	440	35	58
250A	750	300	180	280	27	10	250	70	84	679	50	80
300A	750	350	200	300	27	10	250	70	91	951	63	110
350A	770	450	250	350	33	10	250	70	145	1148	88	151
400A	800	500	300	400	33	10	250	70	163	1474	115	195
450A	840	550	350	450	39	10	250	70	156	1852	150	237
500A	900	600	400	500	39	10	250	70	171	2261	184	295
600A	900	650	450	550	45	10	250	70	237	3263	248	402

# SJT2100

AXIAL COVERED TYPE SINGLE EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	1	Short Pipe 1	CS
3	1	Neck Ring 1	SS400
4	1	Internal Sleeve	SUS304
5	1	Bellow	SUS304
6	1	Cover	SS400
7	1	Neck Ring 2	SS400
8	-	Shipping Bolt, Nut, Washer	SS400
9	1	Short Pipe 2	CS

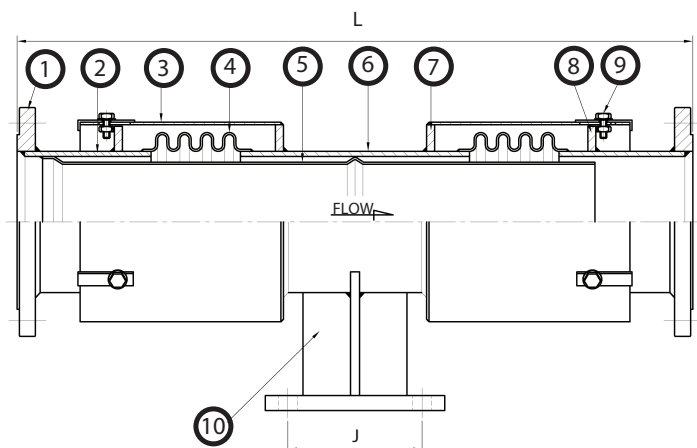
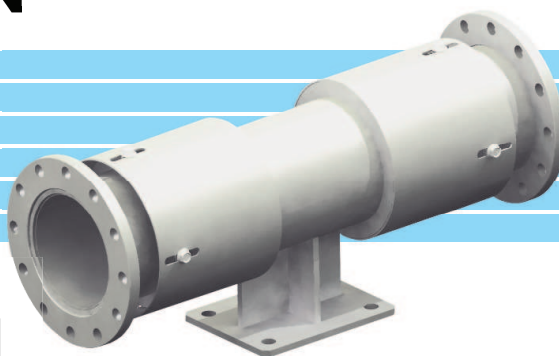
<b>Design Working Pressure</b>	10-25 bars(150-360 PSI)
<b>Design Working Temperature</b>	250°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- Shipping devices (*yellow sticker*) must be removed prior to start-up or testing the system.
- Please consult us for other material, temperature and movement designs.
- SJT-2101,2103,2105 10 bars (150 PSI)  
SJT-2102,2104 20 bars (300 PSI)  
SJT-2106 16 bars (232 PSI)  
SJT-2107 25 bars (360 PSI)

Size	L (mm)	Design Pressure (Bar)	Design Temperature (Deg.C)	Axial Movement (mm)	Axial Spring Rate (N/mm)	Effective Area (cm <sup>2</sup> )	Mass(kg)	
							Pipe End	Flange End
40A	365	10	250	25	60	24	2	5
50A	365	10	250	25	78	37	3	7
65A	415	10	250	35	97	51	5	12
80A	415	10	250	35	87	80	6	14
100A	415	10	250	35	105	131	9	20
125A	415	10	250	35	101	198	12	24
150A	440	10	250	35	136	265	15	30
200A	440	10	250	35	166	440	24	48
250A	465	10	250	35	169	679	33	64
300A	465	10	250	35	182	951	42	91
350A	465	10	250	35	291	1148	52	117
400A	490	10	250	35	327	1474	66	149
450A	490	10	250	35	312	1852	79	171
500A	490	10	250	35	341	2261	90	207
600A	490	10	250	35	474	3263	126	288

# SJT2200

## AXIAL COVERED TYPE DOUBLE EXPANSION JOINT



<b>Design Working Pressure</b>	10-25 Bar (150-360 PSI)
<b>Design Working Temperature</b>	250°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	2	Cover	SS400
4	2	Bellows	SUS304
5	1	Internal Sleeve	SUS304
6	1	Middle Pipe	CS
7	2	Neck Ring 1	SS400
8	2	Neck Ring 2	SS400
9	-	Shipping Bolt, Nut, Washer	SS400
10	1	Anchor Base	SS400

- Shipping devices (*yellow sticker*) must be removed prior to start-up or testing the system.

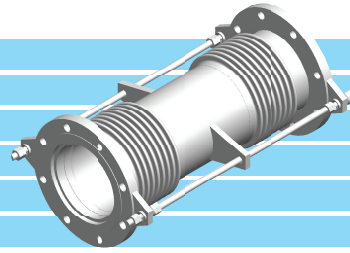
- SJT-2201,2103,2105 10 bars (150 PSI)  
SJT-2202,2104 20 bars (300 PSI)  
SJT-2206 16 bars (232 PSI)  
SJT-2207 25 bars (360 PSI)
- Please consult us for other material, temperature and movement designs.

Size	L (mm)	H	J	K	Ød	Design Pressure (Bar)	Design Temperature (Deg.C)	Axial Movement (mm)	Axial Spring Rate (N/mm)	Effective Area (cm <sup>2</sup> )	Mass(kg)	
											Pipe End	Flange End
40A	680	120	100	70	12	10	250	50	30	24	6	8
50A	680	130	100	80	15	10	250	50	39	37	8	12
65A	780	140	120	100	15	10	250	70	49	51	12	19
80A	780	150	120	110	15	10	250	70	43	80	15	23
100A	880	170	120	130	19	10	250	70	53	131	22	33
125A	880	200	120	150	19	10	250	70	50	198	30	42
150A	930	220	160	180	23	10	250	70	68	265	39	54
200A	930	250	160	220	25	10	250	70	83	440	65	89
250A	980	300	180	280	27	10	250	70	84	679	89	120
300A	980	350	200	300	27	10	250	70	91	951	110	159
350A	1030	450	250	350	33	10	250	70	145	1148	150	216
400A	1030	500	300	400	33	10	250	70	163	1474	186	270
450A	1080	550	350	450	39	10	250	70	156	1852	237	329
500A	1080	600	400	500	39	10	250	70	171	2261	271	388
600A	1200	650	450	550	45	10	250	70	237	3263	362	524

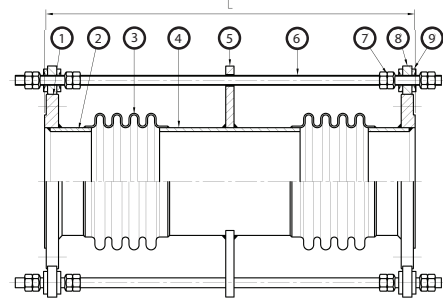


# SJT 7200

**UNIVERSAL TYPE DOUBLE EXPANSION JOINT WITH LIMIT RODS**  
Classical type of double bellows construction, for large amount of axial and lateral movement.



## Structure



## Feature

**Absorbition for large amount of thermal expansion:**  
Double Bellows Expansion Joints are employed in piping systems to absorb large amount of differential thermal expansion while and lateral displacement containing the system pressure.

**Maximize the productivity:**  
Standard design of movement and material maximizes the productivity while the custom design maximizes the suitability for special applications.

**Reliability:**  
Computer designed bellows element complies with EJMA criteria.

**Quality:**  
All products are tested before delivery according to relevant code or ISO quality control system.

<b>Design Working Pressure</b>	1.02 MPA (10 Kgf/cm <sup>2</sup> )
<b>Design Working Temperature</b>	250°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	2	Bellows	SUS304
4	1	Middle Pipe	CS
5	-	Middle Holder	SS400
6	-	Limit Rods	SS400
7	-	Spherical Nut and Nut	SS400
8	-	Thick Holder	SS400
9	-	Conical Seat	SS400

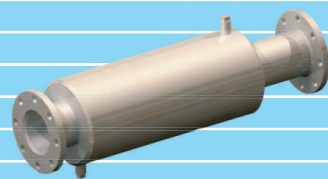
Size	L (mm)	Design Pressure (Bar)	Design Temperature (Deg.C)	Movement (mm)		Spring Rate (N/mm)		Effective Area (cm <sup>2</sup> )	Mass (kg)
				Axial	Lateral	Axial	Lateral		
40A	500	10	250	25	25	83	2	25	9
50A	500	10	250	25	25	95	3	36	11
65A	500	10	250	25	25	94	4	51	15
80A	500	10	250	25	25	89	5	79	18
100A	550	10	250	25	25	116	9	128	24
125A	550	10	250	25	25	122	16	187	27
150A	550	10	250	25	25	124	21	262	33
200A	600	10	250	25	25	124	27	441	55
250A	600	10	250	25	25	125	45	665	80
300A	600	10	250	25	25	144	83	948	105
350A	600	10	250	25	25	145	99	1133	142
400A	600	10	250	25	25	138	137	1452	166
450A	650	10	250	25	25	147	156	1822	223
500A	650	10	250	25	25	182	248	2290	273
600A	700	10	250	25	25	221	316	3230	395

## Installation Guide

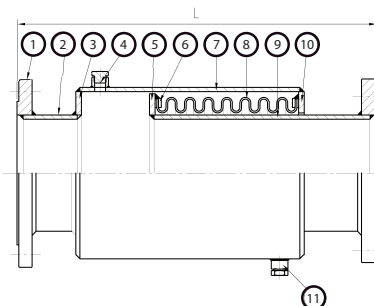
Nuts are fixed by welding for allowable movement setting  
Shipping devices (painted yellow) must be removed prior to start-up or testing the system.  
Please consult us for other material, pressure, temperature and movement designs.  
Please read the instruction xxxxx before designing and installation.

# SJT4100

## EXTERNAL PRESSURIZED EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	1	Short Pipe	CS
3	1	Band Ring	SS400
4	1	Purge Connection	CS
5	1	Guide Ring	SS400
6	4	Half Ring	SUS304
7	1	Cover Pipe	SS400
8	1	Stainless Steel Bellows	SUS304
9	1	Inner Pipe	CS
10	1	Cap Ring	SS400
11	1	Drain	CS



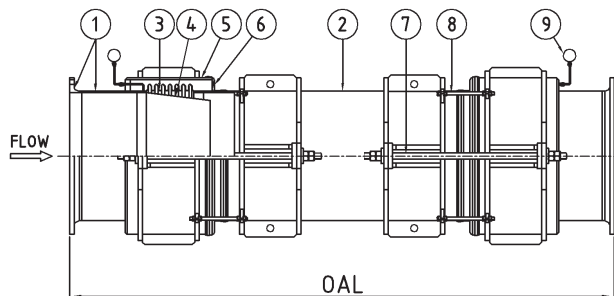
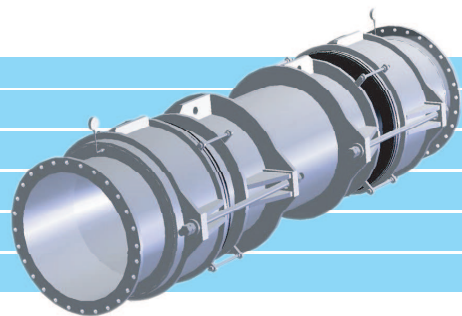
<b>Design Working Pressure</b>	10-25 Bar (150-360 PSI)
<b>Design Working Temperature</b>	200°C
<b>Applicable Fluid</b>	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- Besides the large amount of axial movement, another special feature of external pressure balanced type expansion joint is the self-draining convolutions. It can prevent any the accumulation of corrosive or solid particles from building up. Liquid media can 100% drains away from the drain connection, if needed, assists by the purging.
- SUS 304 bellows and pipe are available upon requested.
- Please consult us for other material, temperature and movement designs.
- SJT-4101,4103,4105 - 10 bars (150 PSI)  
SJT-4102,4104 - 20 bars (300 PSI)  
SJT-4106 - 16 bars (232 PSI)  
SJT-4107 - 25 bars (360 PSI)
- For steam application, it is advised using steam trap with the drain connection which eliminates the possibility of any condensate liquid "flashing" to vapor during startups.
- Shipping devices (yellow sticker) must be removed prior to start-up or testing the system.

Size	L (mm)	Design Pressure (Bar)	Design Temperature (Deg.C)	Axial Movement (mm)	Axial Spring Rate (N/mm)	Effective Area (cm2)	Mass(kg) Flange End
25A	475	10	200	50	11	27	7
32A	475	10	200	50	11	27	8
40A	475	10	200	50	11	27	9
50A	500	10	200	50	21	44	14
65A	550	10	200	50	33	63	22
80A	750	10	200	75	26	97	31
100A	800	10	200	100	24	162	55
125A	800	10	200	100	32	228	62
150A	850	10	200	100	42	382	87
200A	850	10	200	100	53	489	118
250A	850	10	200	100	63	705	146
300A	900	10	200	100	99	973	203

# SJT8200

METAL EXPANSION JOINT FOR WATERWORKS PIPING  
UNDERGROUND TYPE



Item	Qty	Name	Standard Material
1	2	Fixed Flange & Pipe	Carbon Steel (SS400)
2	1	Middle Pipe	Carbon Steel (SS400)
3	2	Stainless Steel Bellows	Stainless Steel (SUS304)
4	2	Inner Sleeve	Stainless Steel (SUS304)
5	2	Cover Pipe	Carbon Steel (SS400)
6	2	Rubber Soil Shield	Rubber w/synthetic reinforcement
7	2	Tied Rod	Carbon Steel w/H.D. Galv
8	-	Shipping Rod & Holder	SS400
9	2 set	Monitoring pressure gauge	(Optional)

<b>Design Working Pressure</b>	10 bar (ANSI 150)
<b>Design Working Temperature</b>	Ambient
<b>Applicable Fluid</b>	Fresh water

- Shipping devices (*yellow sticker*) must be removed prior to start-up or testing the system.
- Please consult us for other material, temperature and movement designs.

Size	Axial Movement	The Overall Length (OAL, mm) for the Lateral Movement, Y		
mm (inch)	(mm)	Y=200 mm	Y=500 mm	Y=800 mm
300A(12")	±50	1800	3200	3600
350A(14")	±50	1800	3200	3800
400A(16")	±50	1800	3200	3800
450A(18")	±50	1900	3200	4000
500A(20")	±50	2000	3500	4000
600A(24")	±50	2100	3500	4500
700A(28")	±50	2100	3500	4500
800A(32")	±50	2200	4000	5000
900A(36")	±50	2300	4000	5400
1000A(40")	±50	2300	4000	5400
1200A(48")	±50	2500	4500	6000
1350A(54")	±50	2600	4500	6000
1400A(56")	±50	2600	4500	6000
1500A(60")	±50	2700	4500	6200
1800A(72")	±50	2900	5000	7000

- Noted: 1) Radiographic test (X-ray) on longitudinal welding and seam is available upon request.  
2) Material of steel pipe refer to ASTM A283 or JIS G3101 or equivalent.  
3) Steel pipe surface preparation standard to SSPC-SP10, (Gr 2-1/2).  
4) All interior and exterior surface of carbon steel or mild steel parts (except stainless steel part) are coated with liquid epoxy coating system (containing no coal tar) conforming to AWWA C210 with minimum thickness 406 microns or otherwise upon request.  
5) Redundant ply design & monitoring pressure gauge is available upon request.



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