

SJT series

METAL EXPANSION JOINT



SJT series

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

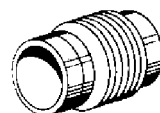
- Bellows type metal Expansion Joints are successfully utilized in refineries, chemical plants, fossil and nuclear power systems, heating and cooling system, and cryogenic plants.

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.

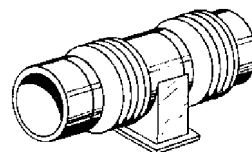
SINGLE EXPANSION JOINT

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.



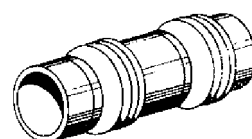
DOUBLE EXPANSION JOINT

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.



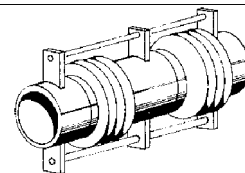
UNIVERSAL EXPANSION JOINT

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.



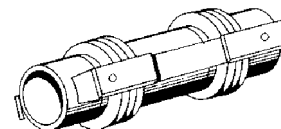
UNIVERSAL TIED EXPANSION JOINT

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.



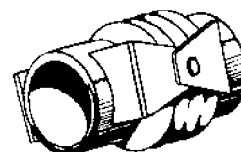
SWING EXPANSION JOINT

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.



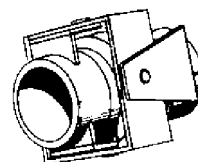
HINGED EXPANSION JOINT

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.



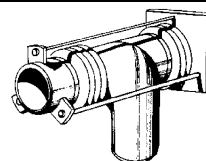
GIMBAL EXPANSION JOINT

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.



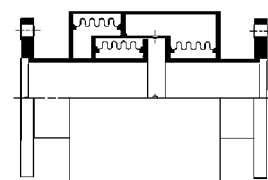
PRESSURE BALANCED EXPANSION JOINT

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.



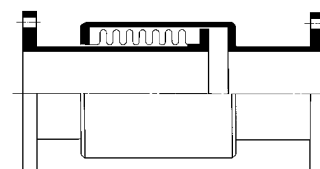
IN-LINE PRESSURE BALANCED EXPANSION JOINT

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.



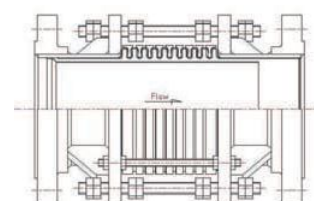
EXTERNAL PRESSURIZED EXPANSION JOINT

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.

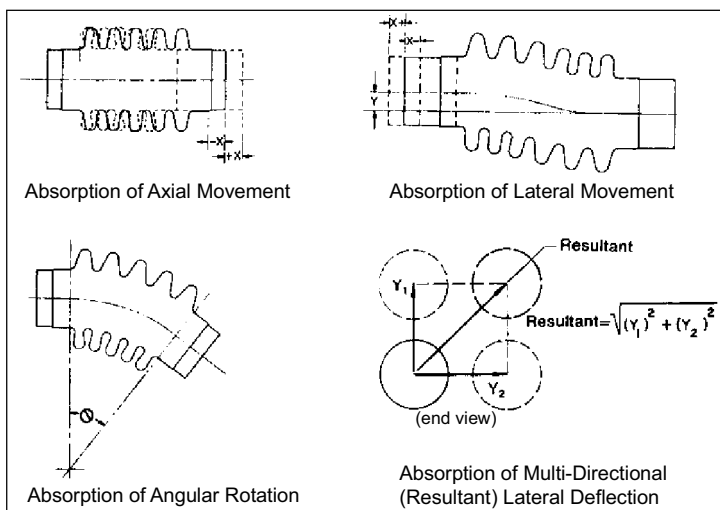


EXPANSION JOINT WITH REINFORCING RING

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

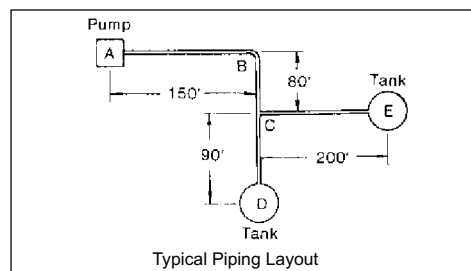


Note : Expansion Joint is not suitable for torsion or twisting movement, because such movement produces extremely high shear stresses in the bellows.

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.

Temperature changes °C	$\beta \Delta t$ (Unit : mm)				
	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

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

ΔX = Axial Movement (mm)

L = Length of piping (metre)

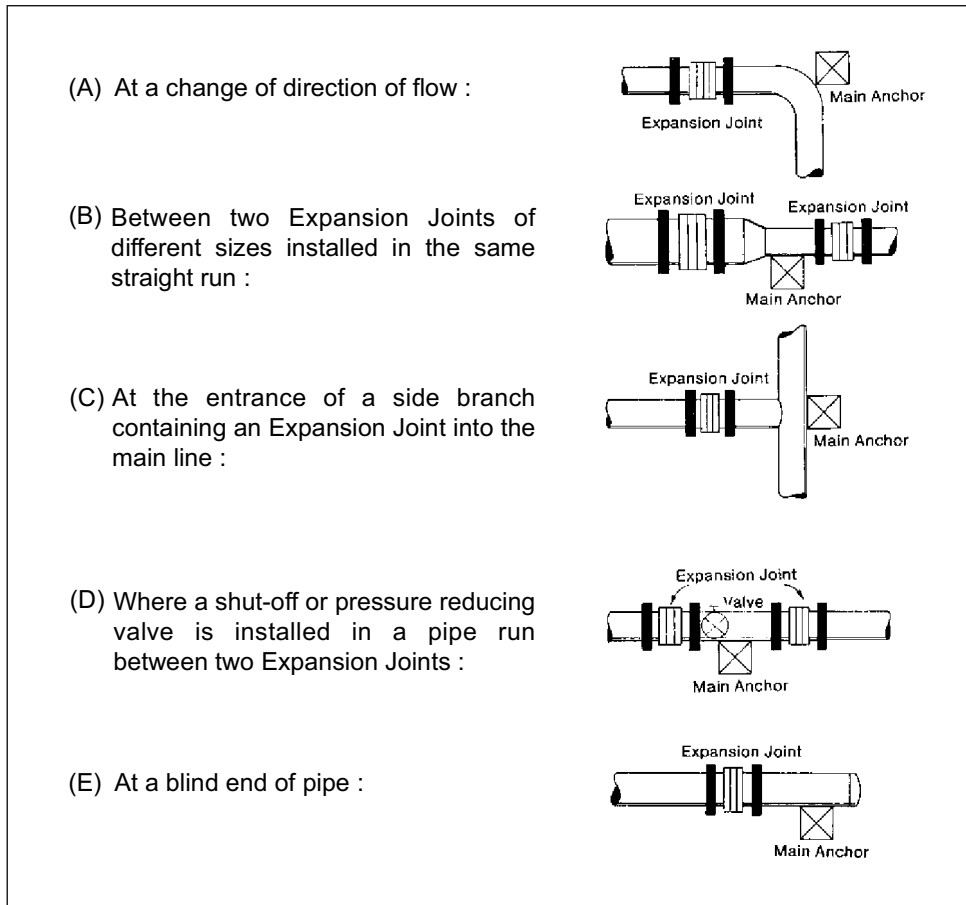
$\beta \Delta t$ = Thermal Expansion by one metre (mm/m)

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.

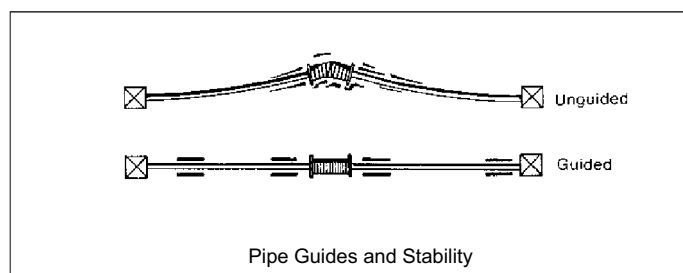


● **Intermediate Anchors**

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.

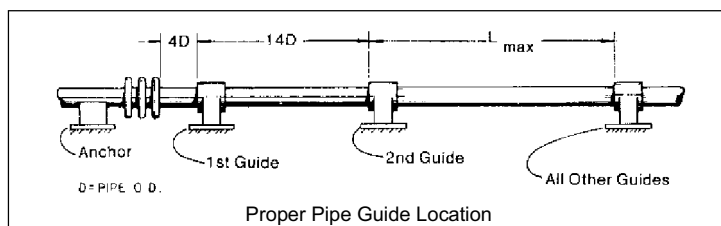
● **Pipe Guide and Support**

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



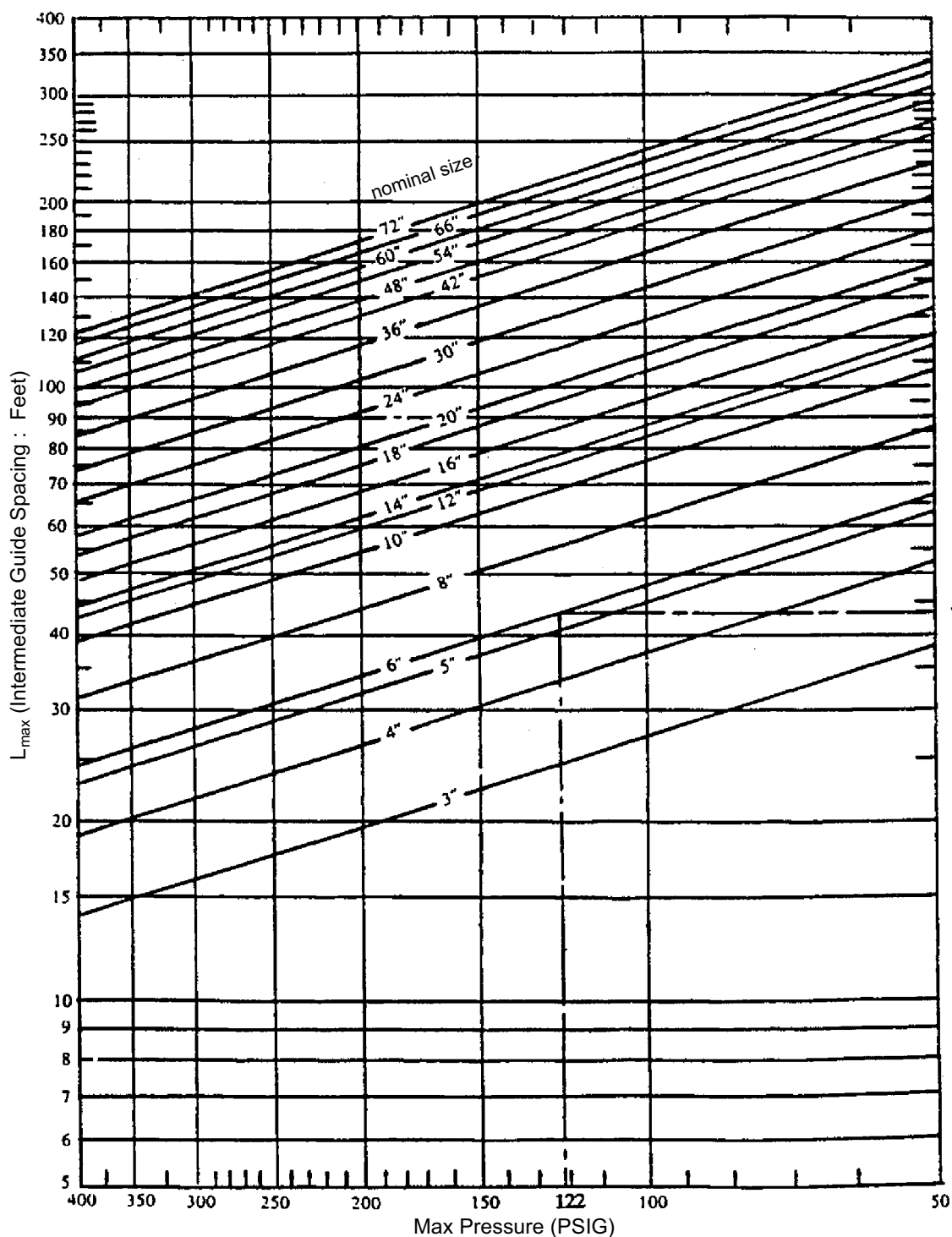
● Pipe Guide Application

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_{max} = see below graph

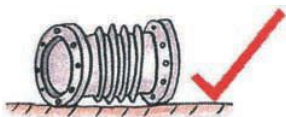


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Guide for storage and installation

- 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.



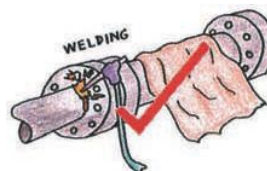
- 3) Never use chains or other devices directly on the bellows.



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



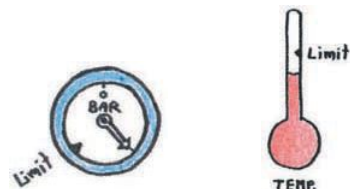
- 5) Don't drop or strike Expansion Joint and beware bellows when you have welding process.



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

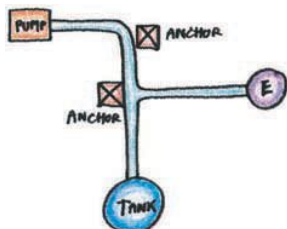


- 7) Check working pressure & working temperature do not exceed the limited.

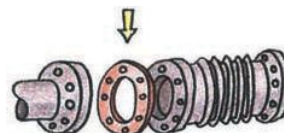


- 8) Check the corrective of flow direction (see arrow mark)  with fluid flow.

- 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

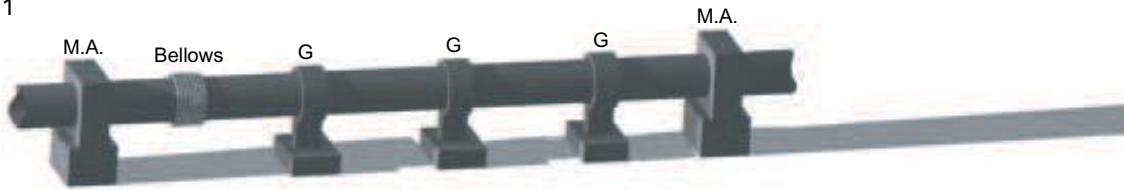
- 1) Anchors, guides, and pipe supports must be installed in strict accordance with the piping system drawing. Any field variances from the planned installation may affect the proper functioning of the Expansion Joint.
- 2) No movement or stresses shall be imposed on Expansion Joint during installation. 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.

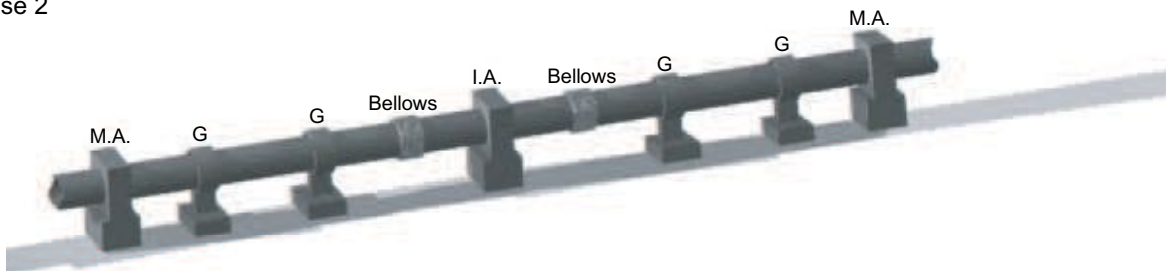
Case of Installation

Case 1



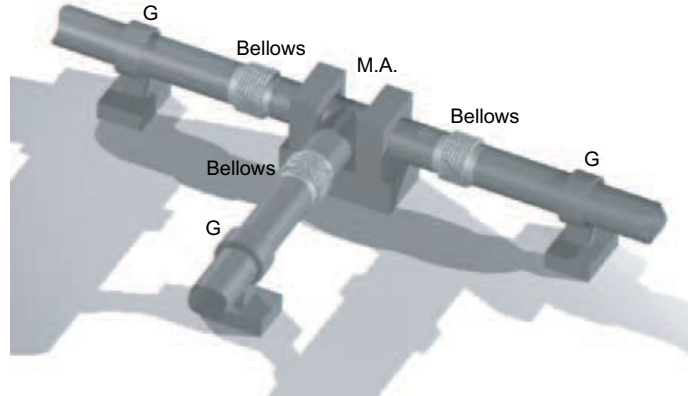
The basic form of single bellows Expansion Joint in a straight line piping between two Main Anchors (M.A.) with support Guides (G).

Case 2



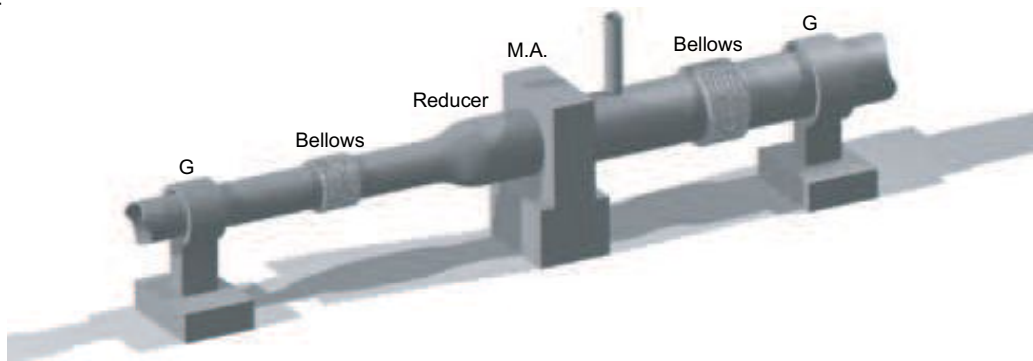
Universal or double bellows Expansion Joint in straight line piping between two Main Anchors and Intermediate Anchors (I.A.) at middle line with support Guides installed.

Case 3



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

Case 4

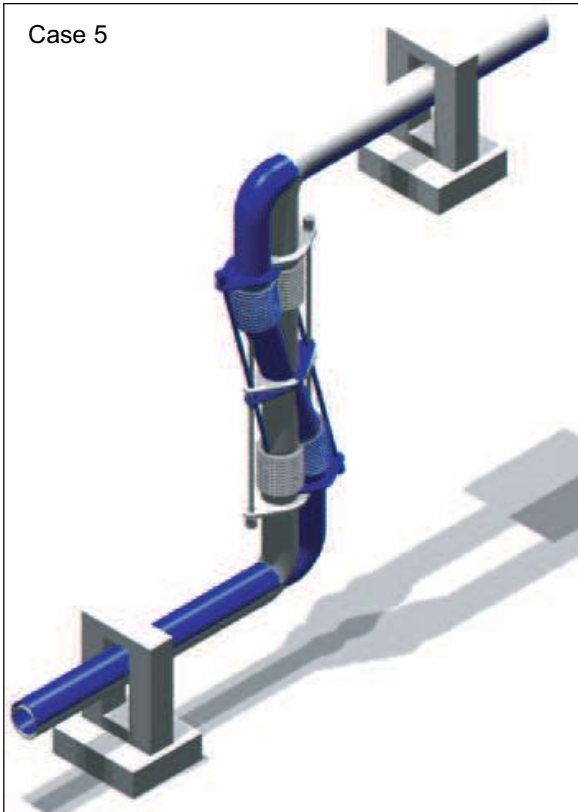


Case of Installation : Expansion Joint between two pipes of different sizes in straight line.

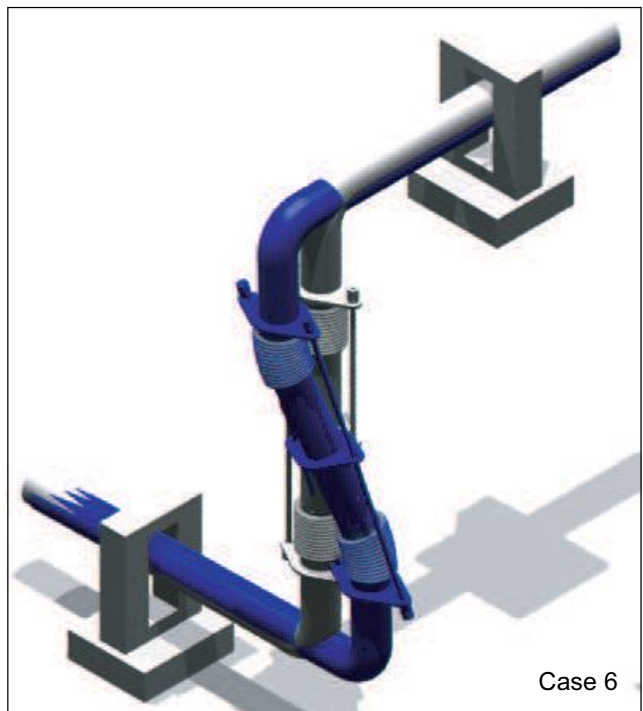
Case 5, 6, 7

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

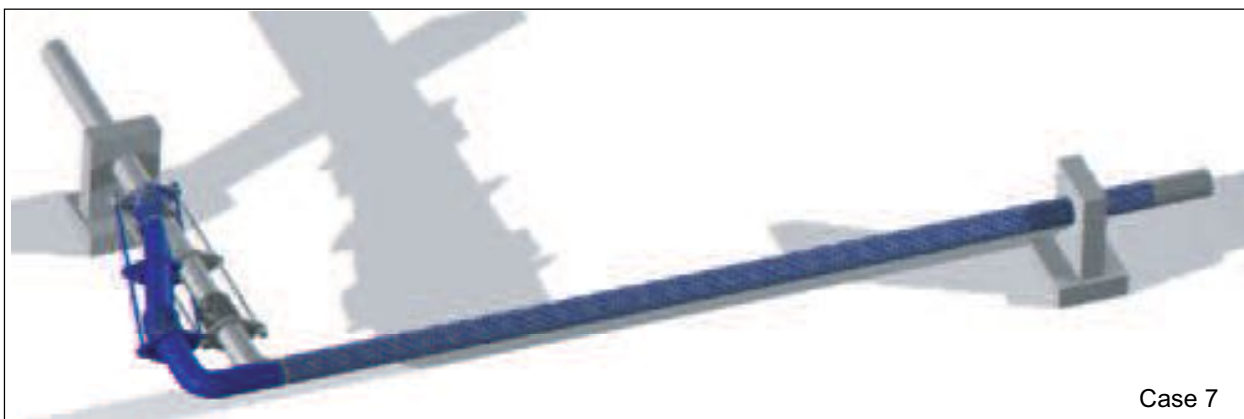
Case 5



Case 6



Case 7



Standard Expansion Joint Specification Sheet (1)

Company :		Date :	Sheet : of	Tel : 023675721-8
Project :		Inquiry No. :		Fax : 023675066
Customer Reference (PO No.) :		Job No. :		Fax : 023675729

Item	Item No. / Tag No.				
1*	Quantity				
2*	Nominal Size / ID / OD (mm)				
3	Expansion Joint Type				
4*	Fluid or Solid Information	Medium Name			
5*		Status (Solid/Liquid/Gas)			
6		Velocity (m/s)			
7		Flow Direction			
8*	Design Pressure (Bar)				
9	Test Pressure (Bar)				
10	Pressure at Operating Temperature (Bar)				
11*	Temperature	Operating (Degree C.)			
12		Max / Min (Degree C.)			
13		Installation (Degree C.)			
14	Max. Installation Movement	Axial Compression (mm)			
15		Axial Elongation (mm)			
16		Lateral (mm)			
17		Angular (degree)			
18*	Max. Design Movement	Axial Compression (mm)			
19*		Axial Elongation (mm)			
20*		Lateral (mm)			
21*		Angular (degree)			
22		No. of Cycle Life			
23	Operating Fluctuations	Axial Compression (mm)			
24		Axial Elongation (mm)			
25		Lateral (mm)			
26		Angular (degree)			
27		No. of Cycle Life			
28*	Materials of Construction	Bellows			
29*		Liners or Inner Sleeve			
30		Cover			
31*		Pipe Specification			
32*		Flange Specification			
33	Rods (Tie / Limit / Control / Shipping)				
34	Anchor Base (Main / Intermediate)				
35*	Dimensional Limitations	Overall Length (mm)			
36		Outside Diameter (mm)			
37		Inside Diameter (mm)			

TOZEN (THAILAND) CO., LTD. 3388/62 18th Floor, Sitrirat Building, Rama IV Road, Klongtoey, Bangkok 10110, THAILAND
 TOZEN INDUSTRIAL CO., LTD. 126 Moo 9, Wellgrow Industrial Estate, Bangwao, Bangpakong, Chachoengsao, 24180 THAILAND

* = MINIMUM REQUIRED INFORMATION

Standard Expansion Joint Specification Sheet (2)

Company :			Date :		Sheet : of		Tel : 023675721-8	
Project :			Inquiry No. :				Fax : 023675066	
Customer Reference (PO No.) :			Job No. :				Fax : 023675729	

Item	Item No./ Tag No.					
38	Spring Rate Limitations	Axial (Kg / mm)				
39		Lateral (Kg / mm)				
40		Angular (Kg / mm / deg)				
41	Installation Position (Horizontal / Vertical)					
42	Vibration Amplitude / Frequency					
43	Purge Instrumentation Connection					
44	Special Flange Design	Facing				
45		O.D. (mm)				
46		I.D. (mm)				
47		Thickness (mm)				
48		P.C.D. (mm)				
49		No. of Holes				
50		Size of Holes				
51		Hole Orientation				

Piping Sketch / Product Sketch

TOZEN (THAILAND) CO., LTD. 3388/62 18th Floor, Sitrirat Building, Rama IV Road, Klongtoey, Bangkok 10110, THAILAND

TOZEN INDUSTRIAL CO., LTD. 126 Moo 9, Wellgrow Industrial Estate, Bangwao, Bangkok, Chachoengsao, 24180 THAILAND

Classification of STAINLESS STEEL EXPANSION JOINT

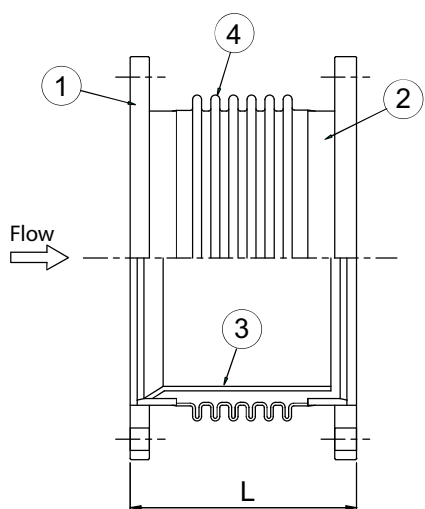
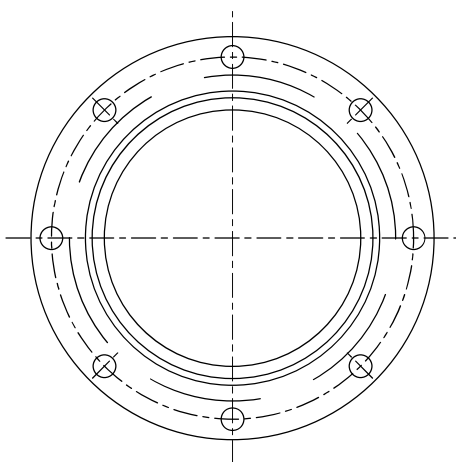
SJT -

BELLOW		METERIAL 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		

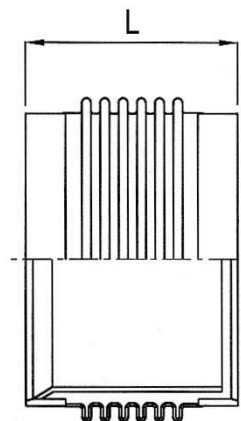
COMBINATION		MATERIAL OF BELLOWS		SPECIAL CASE	
1	Axial Free Type	(none)	SUS304	(none)	with Shipping Rods
2	Axial Covered Type	316	SUS316	NS	No Inner Sleeve
3	Axial Reinforced Type	316L	SUS316L	LR	with Limit Rod
4	External Pressurised Type	316Ti	SUS316Ti	VS	Vanstone Type
5	Hinged Type	---	Others (specify)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

SJT1100

AXIAL FREE TYPE EXPANSION JOINT



Flange End



Bevel End

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

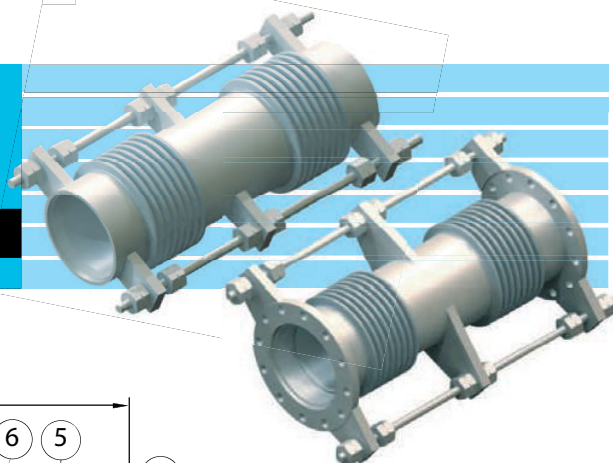
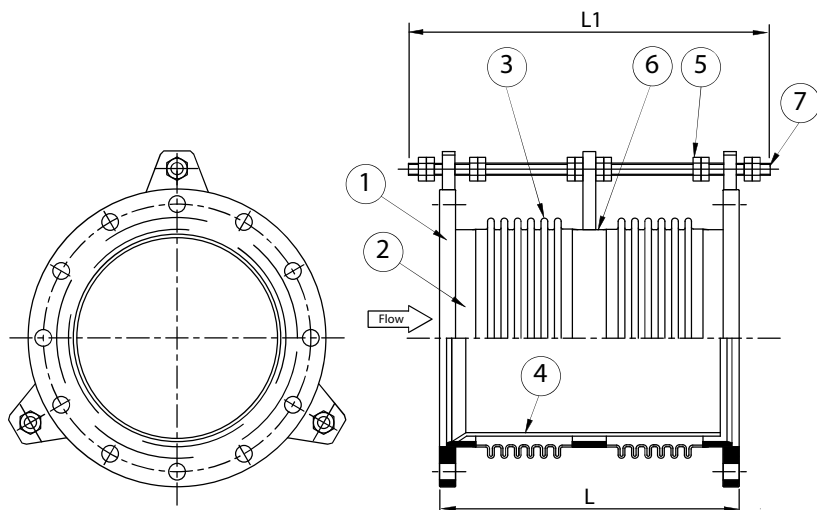
Design Working Pressure	1.02 MPA (10 Kgf/cm ²)
Design Working Temperature	250°C
Applicable Fluid	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- 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.

Nominal Diameter A (B)	Length (L) (mm)		Axial Movement ±x (mm)	Effective Cross Section Area (cm ²)	Spring Constant (N/mm)	Mass (kg)	
	Flange End	Pipe End				Pipe End	Flange End
100 (4")	275	265	-30, +5	131.0	105.2	5.0	15.6
125 (5")	275	265	-30, +5	197.7	100.8	6.6	18.2
150 (6")	300	280	-30, +5	264.9	135.5	8.1	21.9
200 (8")	300	280	-30, +5	439.5	166.1	12.6	35.4
250 (10")	350	330	-30, +5	678.9	168.7	17.3	47.7
300 (12")	350	330	-30, +5	951.0	182.0	21.4	68.4

SJT1200-LR

UNIVERSAL EXPANSION JOINT with Limit Rods



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	2	Bellows	SUS304
4	1	Internal Sleeve	SUS304
5	N/A	Nut	SS400
6	1	Pipe	SS400
7	2 or 3	Limit Rods	SS400

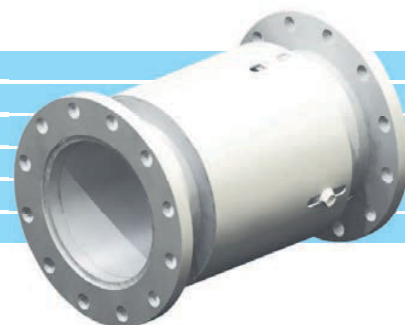
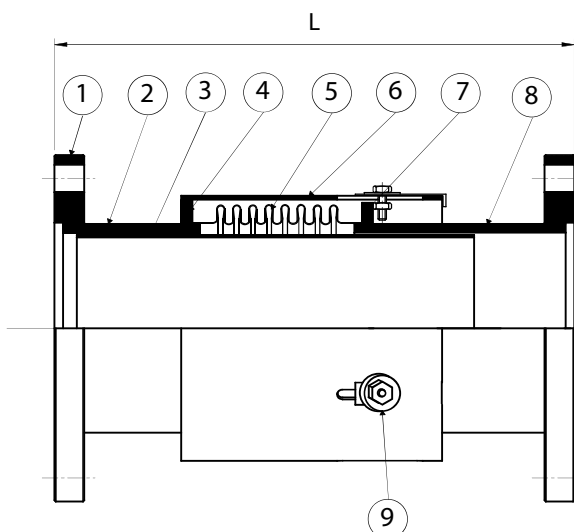
Design Working Pressure	1.02 MPA (10 Kgf/cm ²)
Design Working Temperature	250°C
Applicable Fluid	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- 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.

Nominal Diameter A (B)	Min. Length (L) (mm)		Axial Movement ± x (mm)	Effective Cross Section Area (cm ²)	Spring Constant (N/mm)	Limit Rods & Holder		Approx. Weight (Kg)	
	Flange End	Bevel End				Size	L1 (mm)	Flange End	Bevel End
100 (4")	490	480	-60, +10	131.0	52.6	M16x2pcs	585	20.8	10.2
125 (5")	490	480	-60, +10	197.7	50.4	M16x2pcs	585	24.6	13.0
150 (6")	530	510	-60, +10	264.9	67.8	M16x2pcs	625	29.2	15.4
200 (8")	530	510	-60, +10	439.5	83.1	M16x2pcs	650	42.9	20.1
250 (10")	635	615	-60, +10	678.9	84.4	M20x2pcs	755	60.6	30.2
300 (12")	635	615	-60, +10	951.0	91.0	M20x2pcs	755	87.9	40.9

SJT2100

AXIAL COVERED TYPE SINGLE EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	1	Short Pipe 1	CS
3	1	Internal Sleeve	SUS304
4	1	Neck Ring 1	SS400
5	1	Bellow	SUS304
6	1	Outer Pipe	SS400
7	1	Neck Ring 2	SS400
8	1	Short Pipe 2	CS
9	3 or 4	Setting Bolt & Nut & Washer	Class4.4

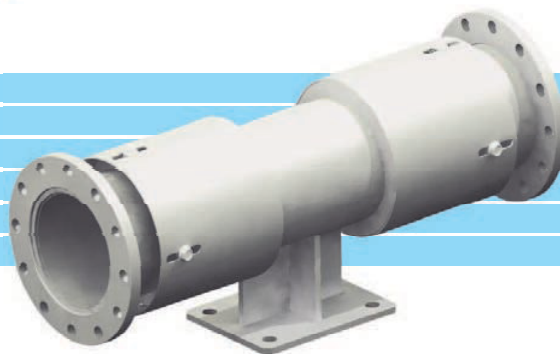
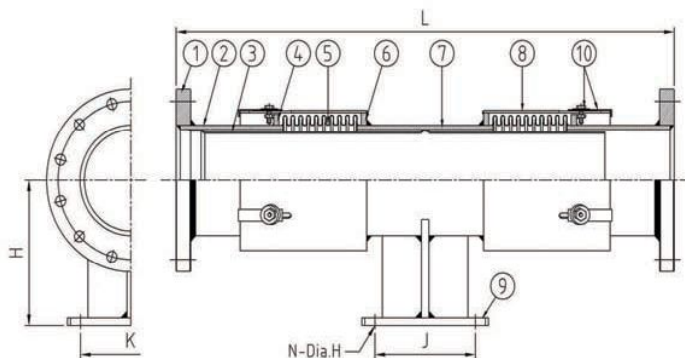
Design Working Pressure	1.02 MPA (10 Kg/cm ²)
Design Working Temperature	250°C
Applicable Fluid	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

- 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.

Nominal Diameter A (B)	Length (L) (mm)	Axial Movement ± x (mm)	Effective Cross Section Area (cm ²)	Spring Constant (N/mm)	Mass (kg)
100 (4")	415	-30, +5	131.0	105.2	18.8
125 (5")	415	-30, +5	197.7	100.8	22.5
150 (6")	440	-30, +5	264.9	135.5	27.5
200 (8")	440	-30, +5	439.5	166.1	45.0
250 (10")	465	-30, +5	678.9	168.7	60.2
300 (12")	465	-30, +5	951.0	182.0	84.7

SJT2200

AXIAL COVERED TYPE DOUBLE EXPANSION JOINT



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

Item	Qty	Name	Standard Material
1	2	Flange	SS400
2	2	Short Pipe	CS
3	1	Internal Sleeve	SUS304
4	2	Neck Ring 2	SS400
5	2	Bellow	SUS304
6	2	Neck Ring 1	SS400
7	1	Middle Pipe	CS
8	2	Outer Pipe	SS400
9	1	Anchor Base	SS400
10	6 or 8	Setting Bolt & Nut & Washer	Class4.4

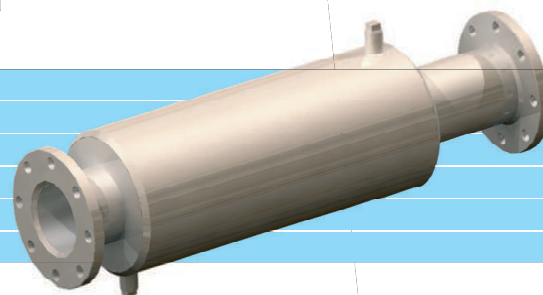
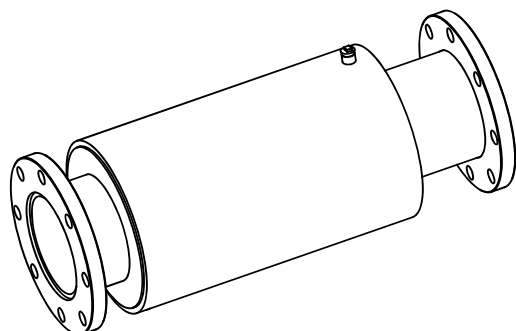
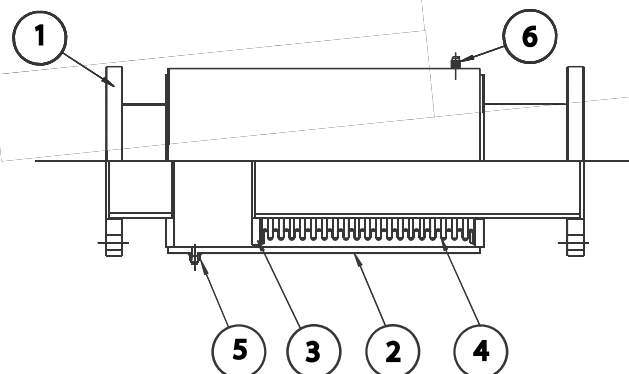
- Shipping devices (*painted yellow*) must be removed prior to start-up or testing the system.

- Please consult us for other material, pressure, temperature and movement designs.

Nominal Diameter A (B)	Length (L) (mm)	H (mm)	J (mm)	K (mm)	N	Dia.H (mm)	Axial Spring Rate (N/mm)	Effective Area (Cm2)	Mass (kg)
100 (4")	880	170	120	130	4	19	52.6	131.0	31.9
125 (5")	880	200	120	150	4	19	50.4	197.7	39.9
150 (6")	930	220	160	180	4	23	67.8	264.9	51.5
200 (8")	930	250	160	220	4	25	83.1	439.5	80.8
250 (10")	980	300	180	280	4	27	84.4	678.8	108.3
300 (12")	980	350	200	300	4	27	90.9	951.2	150.1

SJT4100

EXTERNAL PRESSURIZED EXPANSION JOINT



Item	Qty	Name	Standard Material
1	2	Standard Flange	SS400
2	1	Outer Pipe	CS
3	1	Guide Ring	SS400
4	1	Bellow	SUS316L
5	1	Drain plug (R 1/2")	FCMB
6	1	Purge Connection (R 1/2")	CS

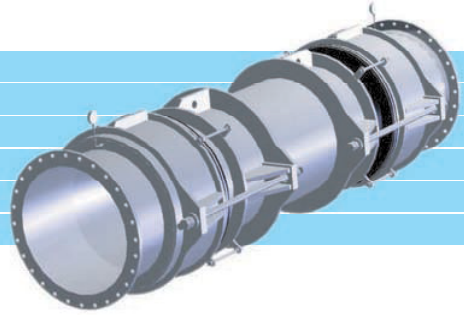
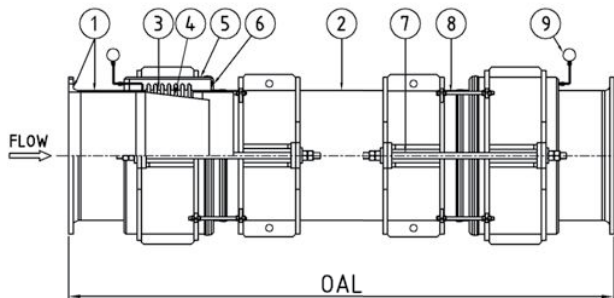
Design Working Pressure	1.02 MPA (10 Kgf/cm ²)
Design Working Temperature	200°C
Applicable Fluid	Water, Hot Water, Oil, Steam, Gas, and Exhaust Air

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

Nominal Diameter A (B)	Length (L) (mm)	Axial Movement (mm)	Effective Cross Section Area (cm ²)	Spring Constant (N/mm)	Mass (kg)
25 (1")	475	-45,+5	27.4	10.7	7.10
32 (1-1/4")	475	-45,+5	27.4	10.7	8.20
40 (1-1/2")	475	-45,+5	27.4	10.7	9.10
50 (2")	500	-45,+5	44.5	20.7	13.10
65 (2-1/2")	550	-45,+5	62.8	33.4	20.20
80 (3")	750	-70,+5	97.0	26.4	30.70
100 (4")	800	-95,+5	161.7	24.0	50.50
125 (5")	800	-95,+5	228.3	31.5	58.80
150 (6")	850	-95,+5	381.9	43.0	82.90
200 (8")	820				

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)

Design Working Pressure	1.02 MPA (10 Kg/cm ²)
Design Working Temperature	Ambient
Applicable Fluid	Fresh water

- 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.

Size mm (inch)	Axial Movement (mm)	The Overall Length (OAL, mm) for the Lateral Movement, Y		
		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.