

U.S. Bellows, Inc. is comprised of the manufacturing resources of *RM Engineered Products of Ladson, SC* (acquired in 1995) and *Ketema - U.S. Bellows, Inc. of San Diego, CA* (acquired in 1997).

Since the 1960s, U.S. Bellows has been designing and manufacturing engineered Expansion Joints for various industries and applications, including the following:

Fossil Fuel Power Plants	Chemical & Petrochemical	Stationary Engine Exhaust	Pulp & Paper
Power	Heat Exchangers	Municipal Water Districts	Aerospace Turbo Engine Exhaust
District Energy	FCC Units	Waste Water Treatment	Truck Exhaust
Gas Turbines	U.S. Navy	Solid Waste Incineration	Heavy Metal
Steam Distribution	Kilns	Environmental Applications	Marine Piping & Exhaust
Geothermal Power Plants	Furnace Sealing Bags	HVAC, Building Heating & Cooling Systems	Liquefied Natural Gas (LNG) Service
Refinery	Research & Development		

FACILITY

U.S. Bellows has the capability to fulfill any expansion joint requirement. Our location gives us the advantage for fast and convenient shipping around the world.

- Located near the port of Houston
- 22 acres of land
- 450,000 sq. ft. of shop space



MANUFACTURING

Over 30 years of engineering and manufacturing experience guarantees that our products will have the performance reliability customers desire. U.S. Bellows, Inc. manufactures bellows in a variety of methods including the following:

- Roll Forming (24" to 180" dia.)
- Expanding Mandrel / Punch Forming (2" to 120" dia.)
- Hydro Forming
- Rectangular and Fabric up to 40' x 40'



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10" Single tied titanium Expansion Joints for a chemical plant in Kingsport, Tennessee

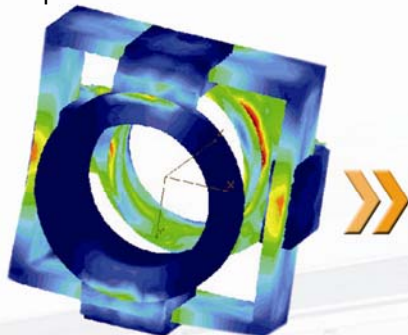


12" dia. Single Expansion Joint, with 304SS bellows, SA 105 150# RFSO and C/S weld ends.

ENGINEERING

U.S. Bellows, Inc. has over 45 experienced engineers on-site to provide you with cost-effective, high quality solutions. Utilizing the latest design software and analysis applications, as well as in-house developed software, U.S. Bellows can design and manufacture specialized custom units as per your specifications.

Finite Element Analysis and Pipe Stress Analysis software are used to simulate the loads and resulting stresses that may occur in a design system. These computer programs help determine engineering design specifications to meet load/stress requirements.



Gimbal Stress Analysis for 804,242 lbs. Pressure Thrust of a 36" Gimbal ring for a Gimbal Expansion Joint



36" Gimbal Expansion Joint after completion



36" Gimbal Expansion Joint, designed for 680 PSIG and 540 °F, installed at chemical plant

QUALITY

As a member of EJMA, U.S. Bellows, Inc. follows strict quality control procedures to ensure that its products meet industry standards. U.S. Bellows, Inc. is in compliance with the following codes and standards as applicable:

ASME Section VIII	ANSI B31.1
ANSI B31.3	API 620
AISI	EJMA
ICBO	

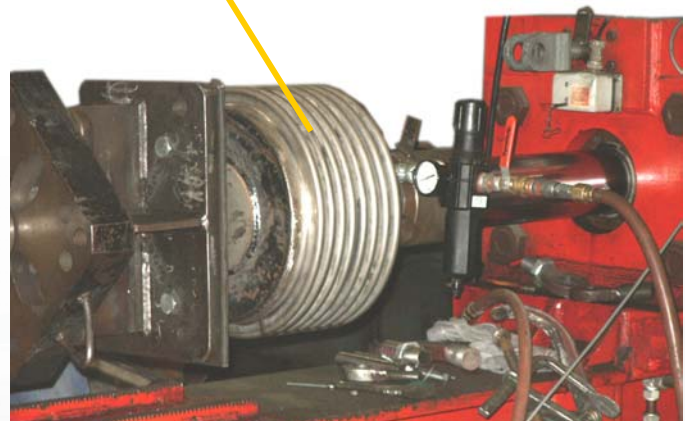
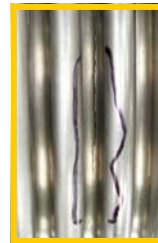
Each Bellows and Expansion Joint is inspected thoroughly, both during the fabrication process and prior to shipping, to ensure the products are delivered to our customers in optimum condition.

U.S. Bellows, Inc. offers the following Performance Assurance Programs:

Hydrostatic Testing	Liquid Penetrant Inspection
Magnetic Particle	Radiography Test
Ultrasonic	Positive Material Identification (PMI) Test
Cycle Testing	Pneumatic Testing
Burst Testing	Spring Rate Testing
Helium Leak Detection	



Hydro test on a 30" Rubber Expansion Joint designed for 150 PSIG and 221 °F



Cycle Test on a 12" dia. A240-321SS Bellows with 8 convolutions. The bellows has met the EMJA cycle life calculation of 1,000 cycles and failed in the root of the convolutions at 1,285 cycles.



Burst Test on a 20" Bellows as per US Army specifications

PRODUCTS

U.S. Bellows, Inc. has extensive experience in designing and manufacturing all types of Metallic and Fabric Expansion Joints. In addition, U.S. Bellows can repair/fabricate replacement and equivalent Expansion Joints manufactured by other suppliers.

▶ THIN WALL METALLIC — SINGLE EXPANSION JOINT

A Single Expansion Joint is a bellows element with end connections that allows movement in any direction or plane. However, the piping must be guided in the same direction of the movement. Single Expansion Joints are the least expensive type available.



30" dia. Expansion Joint, with 2-plies 321SS bellows, designed for 50 PSIG and 650 °F



24" dia. Single Expansion Joint, with 321SS bellows, liner and cover, designed for 50 PSIG and 651 °F

▶ THIN WALL METALLIC — TOROIDAL EXPANSION JOINT



92" I.D. Toroidal Bellows Expansion Joint designed for 400 PSIG and 500 °F

▶ THIN WALL METALLIC — UNIVERSAL EXPANSION JOINT

The universal expansion joint consists of two bellows separated by a pipe section or spool. This arrangement allows the unit to accept large amounts of lateral deflection. The amount of lateral deflection capability can be adjusted by changing the length of the center spool.



47" I.D. x 80" Universal Expansion Joint with SB-443 Round Corners Bellows



24" Tied Universal Expansion Joints designed for 170 PSIG and 450 °F for a chemical plant in Africa

\\ FOR ALL YOUR ENGINEERING & CONSTRUCTION NEEDS \\

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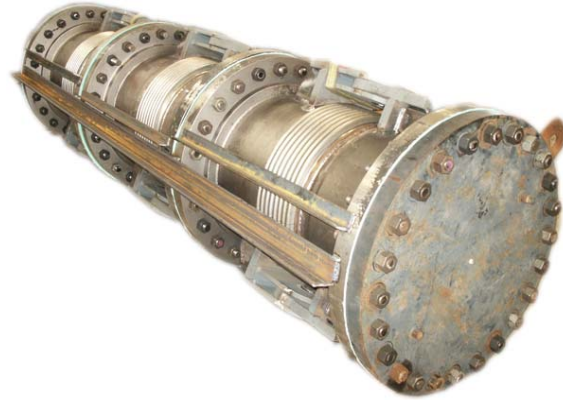
PRODUCTS

▶ THIN WALL METALLIC — HINGED EXPANSION JOINT

Hinged Expansion Joints contain hinges or pivots which allow the unit to bend in a single plane. These units are designed to restrict axial deflection, either in extension or compression. The hinge mechanism is typically designed to accept full pressure thrust.



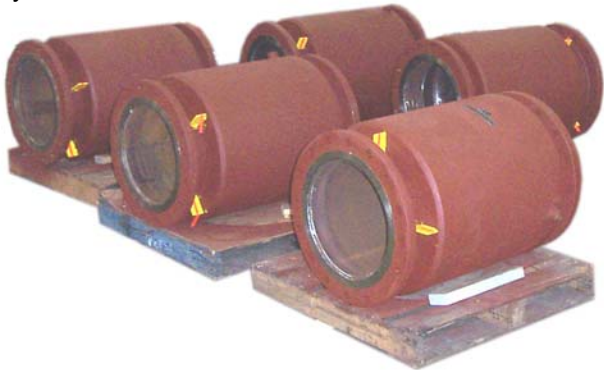
24" dia. Single Hinged Expansion Joints designed for 170 PSIG and 580 °F for a water facility in Pennsylvania



36" Single Hinged Expansion Joint designed for 338 °F and 450 PSIG

▶ THIN WALL METALLIC — EXTERNALLY PRESSURIZED EXPANSION JOINT

Externally Pressurized Expansion Joints contain a bellows and an outer-shell. In this design, the pressure is applied externally to the bellows. These expansion joints will require anchoring of the piping system.



Externally Pressurized Expansion Joints for a steam plant in Kent, Ohio. The expansion joints, fabricated with 304 SS bellows and carbon steel shell and flanges, were designed for 150 PSIG and 350 °F for a maximum of 4" compression.

▶ THIN WALL METALLIC — CLAMSHELL BELLOWS



14" dia. Clamshell bellows designed for 150 PSIG and 150 °F

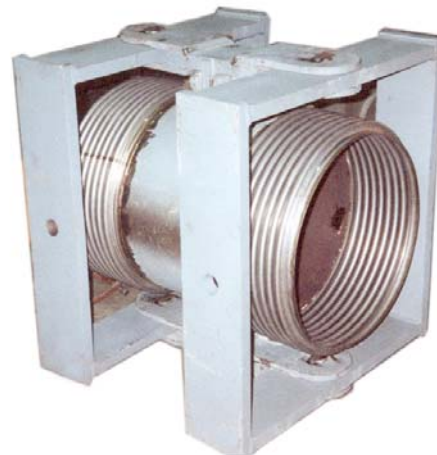
PRODUCTS

▶ THIN WALL METALLIC — GIMBAL EXPANSION JOINT

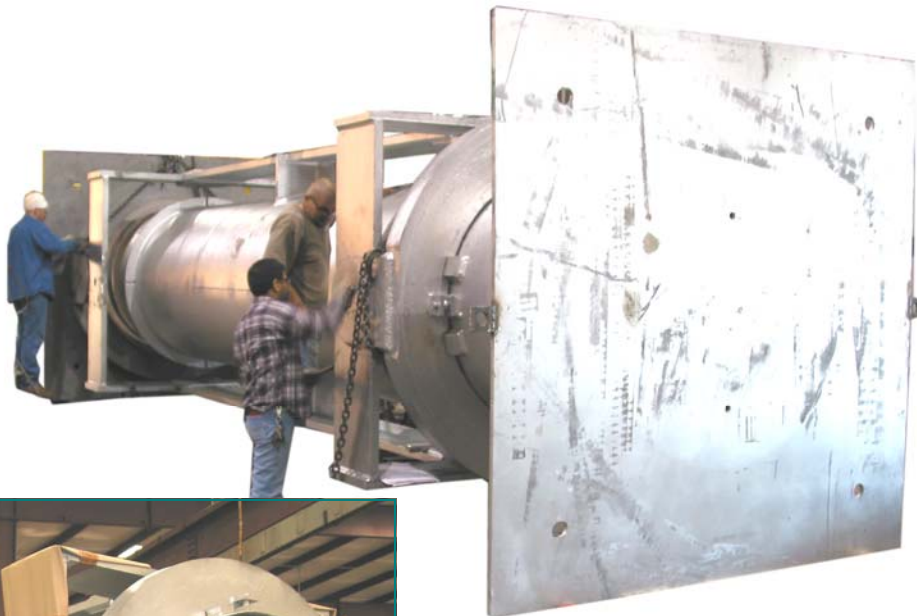
A Gimbal Expansion Joint can accept bending or angulation in two planes. It contains two sets of hinge pins or pivots with the axis of each set perpendicular to the other. Each set of pins is connected to each other with a central gimbal ring, similar to an automobile universal joint.



36" dia. Single Gimbal Expansion Joint, with testable Inco 625 bellows, SA516-70 gimbal rings, designed for 680 PSIG and 270 °F



24" dia. Double Gimbal Expansion Joint, with 321SS bellows, SA516-70 gimbal ring, designed for 130 PSIG and 300 °F



55" O.D. Double Gimbal Universal Expansion Joint for an FCC Unit. The expansion joint is equipped with floating rings and Inco 625 LCF bellows. It is designed for 50 PSIG and 1075 °F.

PRODUCTS

▶ THIN WALL METALLIC — IN-LINE PRESSURE BALANCED EXPANSION JOINT

In-line Pressure Balanced Expansion Joints consist of three bellows - two In-line bellows on each side and one balancing bellows in the middle. They are typically used when axial & lateral deflections exist and anchoring is impractical for structural or economical reasons. An In-line Pressure Balanced Expansion Joint is a solution to difficult design problems.



24" In-line Pressure Balanced Expansion Joints designed for 175 PSIG and 610 °F for a petrochemical plant in Venezuela. The bellows are composed of Inco 625 LCF material and the flanges and liners are constructed from SA516 Grade 70 material.

▶ THIN WALL METALLIC — ELBOW PRESSURE BALANCED EXPANSION JOINT

The mechanism of the Elbow Pressure Balanced Expansion Joint is similar to that of the In-line pressure balanced expansion joint, except these joints are used in piping systems where there is a change of direction. They are generally used to handle a large amount of lateral movement and a moderate amount of axial movement. The pressure thrust is contained within the tie rods of these expansion joints.



Elbow Pressure-Balanced Expansion Joints designed for 150 PSIG and 450 °F to allow lateral and axial movements in a 42" steam line



72" Universal Pressure Balanced Expansion Joint designed for 30 PSIG/full vacuum and 200 °F

PRODUCTS

▶ THIN WALL METALLIC — REFRACTORY LINED EXPANSION JOINT



In Process: 55" O.D. Gimbal Hinged Refractory Lined Universal Expansion Joint for a FCC Unit, designed for 60 PSIG and 1020 °F



In Process: 56" O.D. Gimbal Hinged Refractory Lined Universal Expansion Joint for a CAT Cracker Application, designed for 57 PSIG and 1300 °F



70" Tied Universal Expansion Joint with a 4" thick Refractory Lining per UOP specifications, designed for 51 PSIG and 1460 °F



44" Universal Refractory Lined Expansion Joints designed for 30 PSIG and 1400 °F with Inco 625 LCF bellows and a 4" thk refractory lining per UOP specifications



36" Double Hinged Expansion Joint, with 2-ply Inco 625 Bellows, 3/4" thk A479-304 Abrasion lining per UOP specifications, designed for 50 PSIG and 1000 °F



PRODUCTS

▶ THICK WALL METALLIC EXPANSION JOINT

Thick Wall Expansion Joints are used primarily in heat exchangers and large diameter piping systems where Thin Wall Expansion Joints cannot be used. The bellows are typically fabricated from A516 Grade 70 material, with the thickness ranging from 3/16" to 1". Other materials are available to meet different temperature requirements.



44" thick wall SA516-70 flanged and flued Expansion Joints



108" dia. Thick Wall Expansion Joint, with 2 convolutions

▶ RECTANGULAR EXPANSION JOINT

Rectangular metal expansion joints are used for a variety of applications in power, petrochemical, refining, chemical, and steel industries. Due to the wide range of pressure, temperature, and duct size requirements, each rectangular metal expansion joint is custom-engineered to provide an economical design that will not sacrifice the integrity of the entire system.



71"x143" Round Corner Rectangular Expansion Joint with A240-321 bellows for an oil refinery In India



Camera Corner Rectangular bellows



28"x 66" Rectangular Expansion Joint with 321SS bellows and mitered corners for a chemical plant in South Carolina

PRODUCTS

▶ SLIP TYPE EXPANSION JOINT

Slip Type Expansion Joints are used to accommodate large axial movement. They are available in various materials for different temperature and pressure requirements. Design details must include selection of packing and sealing materials, as well as the media that flows through the expansion joint. All applications require machine surfaces to minimize abrasive wear. Others may require "wiper" mechanisms to prevent potential clogging in between the two slipping pipes.



30" Slip Type Expansion Joint, designed for 150 PSIG and 412 °F for installation in the hydrocarbon flaring system of a refinery



Hydro-testing being performed on a 6" Slip Type Expansion Joint

▶ FABRIC EXPANSION JOINT

Fabric Expansion Joints are often used in ducts which carry hot gases at low pressure. The major design parameters are temperature, pressure and flow rates of the media going through the duct. Layers of different fabrics, insulation, and metal foils can be combined to accommodate different temperatures and pressures in the system. The fabric belt may require periodic replacement.



48" dia. Fabric Expansion Joint with three layers



21' x 14' I.D., Fabric Expansion Joint for a power plant in Puerto Rico

PRODUCTS

RUBBER EXPANSION JOINT



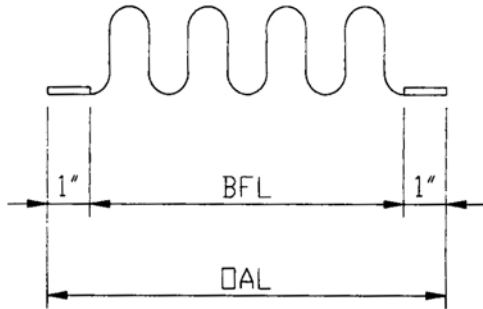
30" dia. Rubber Expansion Joint, with EPDM reinforced tube and cover, telescoping linear A516-70 flanges, designed for 150 PSIG and 221 °F

STOCK BELLOWS

U.S. Bellows has created a system of stock bellows for your quick-turn/emergency requirements. We have over 300 stock bellows on the shelf, ranging in size from 1" to 24" in diameter. Using our stock bellows, U.S. Bellows can quickly assemble and ship a variety of expansion joints.



85 PSIG Single and Multi-ply Stainless Steel Expansion Joint Bellows



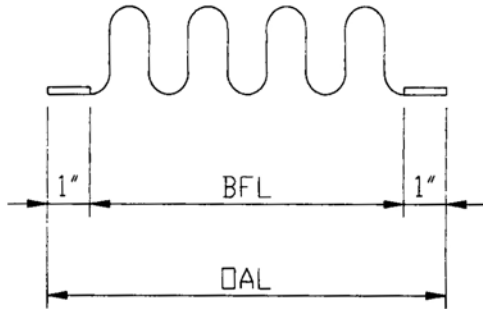
321 S.S. Bellows with Welding Aide
Monel and Inconel available on request

Notes:

1. Pressure Range: Vacuum to 50 PSIG for 3/4" to 1.1/2", 2", and over 85 PSIG
2. Temperature Range: -20F to 800F
3. Rated cycle life is 3000 cycles per EJMA for any one tabulated movement
4. Maximum axial extension movement is 50% of the tabulated axial movement
5. Rated extension movement is equal to rated axial movement provided the bellows is pre-compressed the amount of design extension
6. Maximum test pressure: 1.5x design pressure
7. Materials:
 - Bellows: ASTM A240-T321SS
 - Welding Aides: ASTM A240-T321SS
8. Flanges or weld ends can be attached to the bellows 1/16" thk (min.) Welding aide.
9. For more details request our Expansion Joint Catalog

ND (in)	Part Number	Max. Axial Movement (in)	Max. Lateral Movement (in)	Max. Angular Movement (deg)	B.F.L. (in)	Number Of Corrugation	O.A.L. (in)	Weight Each (lbs)	Axial Spring Rate (lbs/in)	Lateral Spring Rate (lbs/in)	Angular Spring Rate (in/lbs/deg)
3/4	S007050C	0.59	0.47	10	2.75	13	3.50	0.08	392	95	3
	L007050C	0.79	0.71	10	3.56	17	4.31	0.09	302	39	3
1	S010050C	0.59	0.27	10	2.19	9	2.94	0.10	386	274	3
	L010050C	0.87	0.59	10	3.00	13	3.75	0.12	269	90	3
1 1/2	S015050C	0.59	0.24	10	2.38	10	3.13	0.15	515	622	3
	L015050C	0.94	0.59	10	3.63	16	4.38	0.19	325	151	3
2	US-2-8-85S	0.64	0.24	10	3.00	8	5.00	0.50	191	230	3
	US-2-12-85L	0.95	0.53	10	4.50	12	6.50	1.00	281	151	4
2 1/2	US-2.5-8-85S	1.33	0.39	10	3.00	8	5.00	1.00	113	215	3
	US-2.5-12-85L	1.12	0.50	10	4.50	12	6.50	1.00	218	184	5
3	US-3-8-85S	0.71	0.17	10	3.00	8	5.00	1.00	403	1075	14
	US-3-12-85L	1.07	0.40	10	4.50	12	6.50	1.00	269	319	9
4	US-4-8-85S	0.96	0.18	10	3.00	8	5.00	1.00	260	1138	15
	US-4-12-85L	1.45	0.42	10	4.50	12	6.50	2.00	173	337	10
5	US-5-8-85S	0.95	0.15	10	3.00	8	5.00	1.00	325	2075	27
	US-5-12-85L	1.42	0.34	10	4.50	12	6.50	2.00	217	615	18
6	US-6-8-85S	1.10	0.19	10	4.00	8	6.00	3.00	536	2735	64
	US-6-12-85L	1.65	0.44	10	6.00	12	8.00	4.00	358	810	42
8	US-8-8-85S	1.07	0.15	10	4.00	8	6.00	3.00	707	5824	136
	US-8-12-85L	1.61	0.34	10	6.00	12	8.00	5.00	471	1725	90
10	US-10-8-85S	1.99	0.45	10	8.00	8	10.00	6.00	548	1737	162
	US-10-12-85L	2.38	0.82	10	12.00	12	14.00	10.00	729	1027	215
12	US-12-8-85S	2.09	0.40	10	8.00	8	10.00	9.00	711	3177	296
	US-12-12-85L	3.14	0.91	10	12.00	12	14.00	13.00	474	941	197
14	US-14-8-85S	2.05	0.36	10	8.00	8	10.00	10.00	783	4163	388
	US-14-12-85L	3.08	0.81	10	12.00	12	14.00	14.00	522	1234	258
16	US-16-8-85S	2.04	0.31	10	8.00	8	10.00	16.00	1034	7213	671
	US-16-12-85L	3.06	0.71	10	12.00	12	14.00	22.00	689	2137	448
18	US-18-8-85S	2.03	0.28	10	8.00	8	10.00	18.00	1168	10146	944
	US-18-12-85L	3.05	0.63	10	12.00	12	14.00	25.00	779	3006	630
20	US-20-8-85S	2.01	0.25	10	8.00	8	10.00	20.00	1302	13782	1283
	US-20-12-85L	3.02	0.57	10	12.00	12	14.00	28.00	868	4084	855
22	US-22-8-85S	2.28	0.26	10	8.00	8	10.00	23.00	1067	13668	1272
	US-22-12-85L	3.42	0.58	10	12.00	12	14.00	33.00	712	4050	848
24	US-24-8-85S	2.26	0.23	10	8.00	8	10.00	25.00	1167	17615	1640
	US-24-12-85L	3.39	0.53	10	12.00	12	14.00	36.00	778	5219	1093

150 PSIG Single and Multi-ply Stainless Steel Expansion Joint Bellows



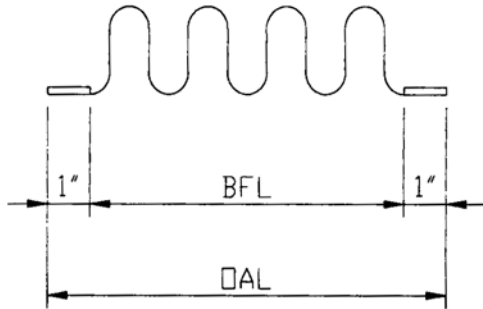
321 S.S. Bellows with Welding Aide
Monel and Inconel available on request

Notes:

1. Pressure Range: Vacuum to 150 PSIG
2. Temperature Range: -20F to 800F
3. Rated cycle life is 3000 cycles per EJMA for any one tabulated movement
4. Maximum axial extension movement is 50% of the tabulated axial movement
5. Rated extension movement is equal to rated axial movement provided the bellows is pre-compressed the amount of design extension
6. Maximum test pressure: 1.5x design pressure
7. Materials:
 - Bellows: ASTM A240-T321SS
 - Welding Aides: ASTM A240-T321SS
8. Flanges or weld ends can be attached to the bellows 1/16" thk (min.) Welding aide.
9. For more details request our Expansion Joint Catalog

ND (in)	Part Number	Max. Axial Movement (in)	Max. Lateral Movement (in)	Max. Angular Movement (deg)	B.F.L. (in)	Number Of Corrugation	O.A.L. (in)	Weight Each (lbs)	Axial Spring Rate (lbs/in)	Lateral Spring Rate (lbs/in)	Angular Spring Rate (in/lbs/deg)
3/4	S007150C	0.33	0.14	10	1.63	7	2.38	0.06	734	633	13
	L007150C	0.47	0.25	10	2.19	10	2.94	0.07	510	218	13
1	S010150C	0.39	0.12	10	1.56	6	2.31	0.08	582	930	13
	L010150C	0.53	0.19	10	1.94	8	2.69	0.09	437	392	13
1 1/2	S015150C	0.41	0.10	10	1.75	7	2.50	0.13	739	1815	13
	L015150C	0.59	0.19	10	2.38	10	3.13	0.15	515	622	13
2	US-2-8-150S	0.34	0.12	10	3.00	8	5.00	0.50	1206	1451	19
	US-2-12-150L	0.51	0.28	10	4.50	12	6.50	1.00	804	430	13
2 1/2	US-2.5-8-150S	0.69	0.20	10	3.00	8	5.00	1.00	327	620	8
	US-2.5-12-150L	0.78	0.34	10	4.50	12	6.50	1.00	536	452	13
3	US-3-8-150S	0.66	0.16	10	3.00	8	5.00	1.00	403	1075	14
	US-3-12-150L	0.82	0.31	10	4.50	12	6.50	1.00	411	472	14
4	US-4-8-150S	0.70	0.13	10	3.00	8	5.00	1.00	635	2780	36
	US-4-12-150L	1.05	0.30	10	4.50	12	6.50	2.00	423	824	24
5	US-5-8-150S	0.69	0.11	10	3.00	8	5.00	2.00	794	5068	66
	US-5-12-150L	1.03	0.25	10	4.50	12	6.50	3.00	529	1502	44
6	US-6-8-150S	0.83	0.15	10	4.00	8	6.00	3.00	1074	5477	127
	US-6-12-150L	1.25	0.34	10	6.00	12	8.00	4.00	716	1623	85
8	US-8-8-150S	0.81	0.11	10	4.00	8	6.00	4.00	1415	11661	271
	US-8-12-150L	1.22	0.26	10	6.00	12	8.00	6.00	943	3455	181
10	US-10-8-150S	1.48	0.33	10	8.00	8	10.00	9.00	1379	4463	415
	US-10-12-150L	2.22	0.75	10	12.00	12	14.00	13.00	919	1322	277
12	US-12-8-150S	1.54	0.29	10	8.00	8	10.00	16.00	1832	8417	784
	US-12-12-150L	2.31	0.66	10	12.00	12	14.00	23.00	1222	2494	522
14	US-14-8-150S	1.53	0.26	10	8.00	8	10.00	18.00	2020	11011	1025
	US-14-12-150L	2.30	0.60	10	12.00	12	14.00	25.00	1347	3262	683
16	US-16-8-150S	1.52	0.23	10	8.00	8	10.00	20.00	2321	16184	1506
	US-16-12-150L	2.28	0.52	10	12.00	12	14.00	29.00	1547	4795	1004
18	US-18-8-150S	1.50	0.20	9	8.00	8	10.00	23.00	2621	22765	2119
	US-18-12-150L	2.26	0.47	10	12.00	12	14.00	32.00	1747	6745	1413
20	US-20-8-150S	1.49	0.18	8	8.00	8	10.00	26.00	2922	30924	2879
	US-20-12-150L	2.24	0.42	10	12.00	12	14.00	36.00	1948	9163	1919
22	US-22-8-150S	1.49	0.17	8	8.00	8	10.00	28.00	3223	40831	3801
	US-22-12-150L	2.23	0.38	10	12.00	12	14.00	39.00	2149	12098	2534
24	US-24-8-150S	1.47	0.11	5	8.00	8	10.00	31.00	3524	52653	4901
	US-24-12-150L	2.21	0.26	8	12.00	12	14.00	43.00	2349	15601	3267

300 PSIG Single and Multi-ply Stainless Steel Expansion Joint Bellows



321 S.S. Bellows with Welding Aide
Monel and Inconel available on request

Notes:

1. Pressure Range: Vacuum to 300 PSIG
2. Temperature Range: -20F to 800F
3. Rated cycle life is 3000 cycles per EJMA for any one tabulated movement
4. Maximum axial extension movement is 50% of the tabulated axial movement
5. Rated extension movement is equal to rated axial movement provided the bellows is pre-compressed the amount of design extension
6. Maximum test pressure: 1.5x design pressure
7. Materials:
 - Bellows: ASTM A240-T321SS
 - Welding Aides: ASTM A240-T321SS
8. Flanges or weld ends can be attached to the bellows 1/16" thk (min.) Welding aide.
9. For more details request our Expansion Joint Catalog

ND (in)	Part Number	Max. Axial Movement (in)	Max. Lateral Movement (in)	Max. Angular Movement (deg)	B.F.L. (in)	Number Of Corrugation	O.A.L. (in)	Weight Each (lbs)	Axial Spring Rate (lbs/in)	Lateral Spring Rate (lbs/in)	Angular Spring Rate (in/lbs/deg)
3/4	S007300C	0.23	0.10	10	1.63	7	2.38	0.07	1607	1394	13
	L007300C	0.35	0.25	10	2.38	11	3.13	0.09	1025	358	13
1	S010300C	0.29	0.12	10	1.94	8	2.69	0.13	1387	1647	13
	L010300C	0.43	0.27	10	2.75	12	3.50	0.17	1226	487	13
1 1/2	S015300C	0.35	0.13	10	2.38	10	3.13	0.22	2279	2733	13
	L015300C	0.51	0.29	10	4.06	15	4.81	0.29	1518	806	13
2	US-2-8-300S	0.32	0.12	10	3.00	8	5.00	0.50	1206	1451	19
	US-2-12-300L	0.48	0.27	10	4.50	12	6.50	1.00	804	430	13
2 1/2	US-2.5-8-300S	0.77	0.30	10	4.00	8	6.00	1.00	733	782	18
	US-2.5-12-300L	0.89	0.52	10	6.00	12	8.00	2.00	1252	594	31
3	US-3-8-300S	0.57	0.19	10	4.00	8	6.00	2.00	2318	3477	81
	US-3-12-300L	0.85	0.42	10	6.00	12	8.00	3.00	1545	1030	54
4	US-4-8-300S	0.77	0.20	10	4.00	8	6.00	3.00	1435	3534	82
	US-4-12-300L	1.16	0.45	10	6.00	12	8.00	4.00	957	1047	55
5	US-5-8-300S	0.74	0.16	10	4.00	8	6.00	4.00	1795	6443	150
	US-5-12-300L	1.11	0.36	10	6.00	12	8.00	5.00	1197	1909	100
6	US-6-8-300S	0.84	0.15	10	4.00	8	6.00	5.00	1576	7903	184
	US-6-12-300L	1.26	0.34	10	6.00	12	8.00	6.00	1051	2342	123
8	US-8-8-300S	0.82	0.11	10	4.00	8	6.00	6.00	2075	16871	393
	US-8-12-300L	1.23	0.26	10	6.00	12	8.00	8.00	1383	4999	262
10	US-10-8-300S	1.52	0.38	10	9.00	8	11.00	18.00	3102	7932	934
	US-10-12-300L	2.28	0.87	10	13.50	12	15.50	26.00	2068	2350	623
12	US-12-8-300S	1.57	0.33	10	9.00	8	11.00	32.00	4141	15031	1771
	US-12-12-300L	2.36	0.76	10	13.50	12	15.50	45.00	2761	4454	1181
14	US-14-8-300S	1.55	0.30	10	9.00	8	11.00	36.00	4566	19662	2316
	US-14-12-300L	2.32	0.68	10	13.50	12	15.50	50.00	3044	5826	1544
16	US-16-8-300S	1.53	0.26	10	9.00	8	11.00	41.00	5245	28900	3405
	US-16-12-300L	2.30	0.60	10	13.50	12	15.50	57.00	3496	8563	2270
18	US-18-8-300S	1.53	0.23	9	9.00	8	11.00	46.00	5924	40653	4789
	US-18-12-300L	2.29	0.53	10	13.50	12	15.50	64.00	3949	12045	3193
20	US-20-8-300S	1.51	0.21	8	9.00	8	11.00	51.00	6604	55223	6506
	US-20-12-300L	2.27	0.48	10	13.50	12	15.50	71.00	4403	16362	4337
22	US-22-8-300S	1.40	0.16	6	8.00	8	10.00	55.00	7284	92281	8590
	US-22-12-300L	2.11	0.36	10	12.00	12	14.00	76.00	4856	27343	5727
24	US-24-8-300S	1.60	0.15	6.85	8.00	8	10.00	64.00	5835	88059	8197
	US-24-12-300L	2.41	0.35	10	12.00	12	14.00	90.00	3890	26092	5465



▶ Round Expansion Joint Specifications

Customer:		Date:	Page:	
Project:		Prepared By:		
Applicable Codes and Standards:				
Item or Tag Number:				
Quantity				
Size				
Style or Type				
End Connections	Thickness / Flange Rating			
	Material			
Pressure	Design			
	Operating			
	Test			
Temperature	Design			
	Operating			
	Installation			
Media	Media			
	Flow Velocity			
	Flow Direction			
Movements	Installation	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
and	Design	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
Life Cycle	Operating	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
Materials	Bellows			
	Liner			
	Cover			
Dimensions	Overall Length			
	Maximum O.D.			
	Minimum I.D.			
Spring Rates	Maximum Axial Spring Rate			
	Maximum Lateral Spring Rate			
	Maximum Angular Spring Rate			
Quality Assurance	Bellows Long Seam Weld			
	Bellows Attachment Weld			
	Piping			
	U-2 Forms			



▶ Rectangular Expansion Joint Specifications

Customer:		Date:	Page:
Project:		Prepared By:	
Applicable Codes and Standards:			
Item or Tag Number:			
Quantity			
Size (specify inside or outside duct dimensions)			
Orientation (horizontal / vertical / inclined)			
Style or Type			
Corner Type			
End Connections	Thickness/Angle Flange Size		
	Material		
Pressure (in. water)	Design		
	Operating		
Temperature	Design		
	Operating		
	Installation		
Media	Media		
	Flow Velocity		
	Flow Direction		
Movements	Axial Extension		
	Axial Compression		
	Lateral (parallel to short side)		
	Lateral (parallel to long side)		
	Angular (parallel to short side)		
	Angular (parallel to long side)		
Materials	Bellows		
	Liner		
	Cover		
Dimensions	Overall Length		
Maximum Spring Rates	Axial		
	Lateral (parallel to short side)		
	Lateral (parallel to long side)		
	Angular (parallel to short side)		
	Angular (parallel to long side)		
Quality Assurance	Bellows Corner Welds		
	Bellows Attachment Weld		

SERVICES

ON-SITE FIELD SERVICES

U.S. Bellows, Inc. has extensive experience providing on-site services for Expansion Joints which include the following:

- Installation guidance
- Field survey and inspection
- Problem resolution and repair
- Replacement Expansion Joints for any quick-turn or emergency situation

We provide you with the most comprehensive program available. U.S. Bellows is available on a 24x7 basis to fulfill any emergency/quick-turn requirement that might arise. With a system of stock bellows, U.S. Bellows can quickly assemble and ship products for any quick-turn/emergency situation.

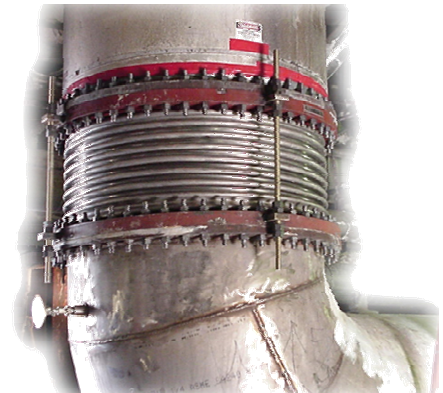


42" x 26" Fabric Expansion Joint, with telescoping liners, and a 2" thk insulation pillow



Friday, 5:30pm

Emergency call from a customer regarding a deformed 48" expansion joint



Sunday

The 48" dia. Expansion joint is installed at customer's location in Alaska



Saturday

The 48" dia. Expansion Joint is manufactured and ready for shipment

For the quickest response, please complete the Emergency Service Request Form at www.usbellows.com/emergency. U.S. Bellows On-call Engineering Team GUARANTEES a 30-minute response time to your request.

SERVICES

CUSTOMER DESKTOP

U.S. Bellows utilizes the latest web/internet technology to serve its customers at any time, anywhere:

- Online Order Status
- Expansion Joint Online Store
- Online Quotation Requests
- Online Catalogs
- Online Discussion Forum

Visit us at www.usbellows.com

INTRODUCING

U.S. BELLOWS ONLINE STORE



32" Tied Universal Expansion Joints designed for 150 PSIG and 380 °F for an oil refinery in China



Rectangular Fabric Expansion Joints designed for a furnace application at a chemical plant in Texas



Dye penetrant test on the bellow's attachment weld of a 40" I.D. Single Coded Clamshell Expansion Joint



Pneumatic and Vacuum test between piles at 15 PSIG/14 PSIG for a 56" O.D. Gimbal Hinged Refractory Lined Universal Expansion Joint