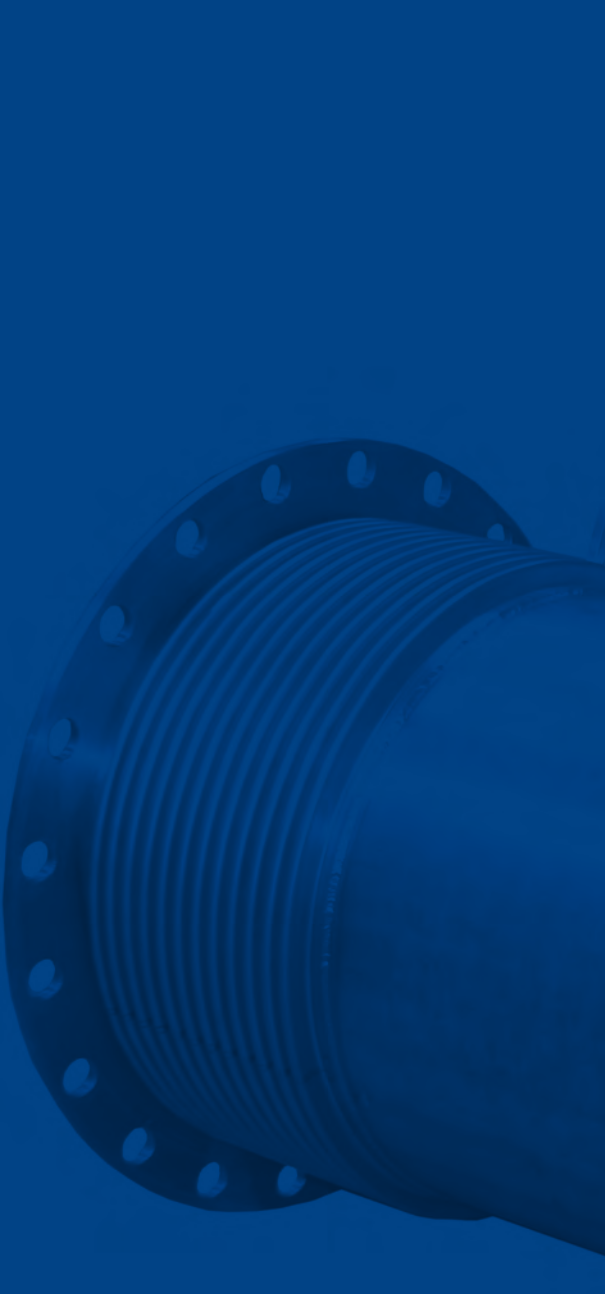




Exhaust Expansion Joints



Triad  **Bellows**
DESIGN + MANUFACTURING

Custom and Standard Low Pressure Expansion Joints

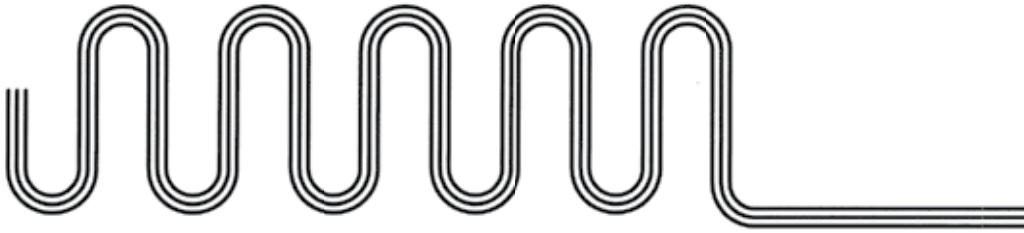


Triad Bellows specializes in custom designed metal bellows expansion joints engineered specifically for the engine exhaust industry. Exhaust expansion joints by design have low spring forces making them the perfect solution for blower, fan and other low pressure applications.

As an industry leader Triad Bellows Design and Manufacturing has the knowledge, capability and years of experience necessary to design and manufacture the expansion joints best suited for your generator's piping system. Our design engineers are also experienced in marine propulsion exhaust, mining truck exhaust, cogeneration facilities and standby power.

Index

Flexible Options	2
Bellows Material	3
Ansi Fixed Flange Exhaust Expansion Joints	4
Ansi Reducing Flange Exhaust Expansion Joints	5
Ansi Flange w/ Cone Exhaust Expansion Joints	6
Ansi Fixed X Floating Flange Exhaust Expansion Joints	7
Ansi Floating Flange Exhaust Expansion Joints	8
Ansi Max Flow Fixed Flange Exhaust Expansion Joints	9
Ansi Max Flow Floating Flange Exhaust Expansion Joints	10
Cummins Inlet Flange Exhaust Expansion Joints	11
Detroit-mtu Inlet Flange Exhaust Expansion Joints	12
Cat Style Inlet Flange Exhaust Expansion Joints	13
Cat Style Inlet Flange Cone Ansi Outlet Expansion Joints	14
Cat Max Flow Fixed X Float Exhaust Expansion Joints	15
Waukesha Inlet Flange Exhaust Expansion Joints	16
Waukesha With Floating Ansi Exhaust Expansion Joints	17
Weld End Exhaust Expansion Joints	18
Socket Weld Exhaust Expansion Joints	19
S/s Slotted Cuff Exhaust Expansion Joints	20
High Temp Fixed Flange Alloy X Expansion Joints	21
High Temp Floating Flange Alloy X Expansion Joints	22
Extreme Movement Fixed Flange Expansion Joints	23
Extreme Movement Floating Flange Expansion Joints	24
Ansi Fixed Flange Universal Expansion Joints	25
Din Pn-6 Metric Expansion Joints	26
Din Pn-10 Metric Expansion Joints	27
Din Jis 5k Metric Expansion Joints	28
Din Jis 10k Metric Expansion Joints	29
150# Ansi Companion Flanges 1/2" Thick	30
Engine Exhaust Flanges 1/2" Thick	31
Thermal Expansion Of Pipe And Tube Chart	32
Anchoring And Guiding Piping System	33
Understanding Ejma 10th Edition Bellows Design Data Sheets	34
Custom Expansion Joint Photos	35



MULTI-PLY METAL BELLOWS

The term multi-ply bellows means that multiple tubes are telescoped together before the bellows forming process. Sizes 2" i.d. up to 110" diameter can be manufactured with up to 5 plies. During bellows movement, each layer in the multi-ply bellows design bends independently of the next. The resulting stresses are much lower with the thinner layers of the multi-wall bellows design (as compared to one thick layer in a single ply metal bellows design).

Triad's multi-ply exhaust bellows expansion joints are frequently used in high vibration applications because the multiple layers of material have a dampening effect. The unique design of Triad's Multi-ply metal bellows means lower spring rates. Therefore, the result is lower forces imposed on the piping anchors, the engine turbo charger or manifold. You will always achieve longer expansion joint cycle life with multi-ply designs— translating into overall cost reduction.

SINGLE-PLY METAL BELLOWS

Not every situation calls for multi-ply bellows: There are times when single-ply bellows will do the job sufficiently. Triad's single-ply metal bellows are formed using the same precise method as our multi-ply bellows. The single-ply bellows in this catalog were designed with the best geometry and material thicknesses to achieve maximum cycle life. Our engineers are happy to help you determine which product is best for your piping system. Sizes are available up to 110" diameter.

EXHAUST BELLOWS MATERIAL SELECTION

T-321 stainless is a titanium stabilized grade stainless commonly used in high temperature service up to 1500°F (815°C) temperature range. Metal bellows applications are restricted to 1200°F (649°C) due to the limited strength properties at extreme temperatures.

T-321 stainless is resistant to intergranular corrosion and to stress corrosion cracking. This stainless allow resists scaling and vibration fatigue making it a widely used material for bellows manufacturing. Applications include generator exhaust, aircraft exhaust systems, chemical processing equipment, oil refinery equipment and turbine engine parts.

MIN %	17	9	0	0	5x(C+N)	0	0	0.25	0	0	0	0
MAX %	19	12	0.75	0.75	0.7	0.08	2	1	0.04	0.03	0.01	Bal.

Hastelloy X[®] is a high nickel superalloy blended with chromium, iron and molybdenum. This proprietary alloy meets the high temperature demands of the modern combustion engine. Other applications include gas turbine engines, aircraft exhaust, industrial furnaces, catalyst support grids and chemical plants. The excellent cold working properties of **Alloy X** makes it a very good bellows material for extreme high temperatures.

Hastelloy X[®] has high strength properties up to 1500°F (815°C) , good oxidation resistance up to 2200°F (1204°C) and is highly resistant to stress corrosion cracking. Metal bellows applications are limited to 1500°F (815°C)

Hastelloy X[®] is a registered trademark name of Haynes International, Inc. but is also known as **Alloy X**

MIN %	20.5	8	0.5	0.2	0	0	0	0.05	17	0	0	0	0	0	0
MAX %	23	10	2.5	1	0.5	0.15	0.01	0.15	20	1	1	0.04	0.03	0.5	Bal.

Inconel 625[®] is a nickel-chromium-molybdenum alloy known that has excellent corrosion and oxidation resistant properties. This Inconel alloy has excellent fatigue strength and is resistant to stress- corrosion cracking when exposed to chlorides. Because of its resistance to heat, corrosion and pressure, **Inconel 625[®]** is ideal for applications in the power industry, marine industries, aerospace, and chemical processing industries.

Inconel 625[®] has good strength characteristics up to 1500°F (816°C) however bellows applications are limited to 1300°F (704°C) because when exposed to the continuous extreme temperature limits it can become brittle. For this reason Hastelloy X may be the better choice.

MIN %	20	0	8	0	3.15	0	0	0	0	0	0	0	0
MAX %	23	Bal.	10	1	4.15	0.4	0.4	0.1	5	0.5	5	0.015	0.015

ANSI FIXED FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
- 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
- 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	7"	1.50"	123	0.625	81	50-306010	10"	2.00"	83	1.0"	24	50-3010	13"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	7"	1.75"	107	0.625	94	50-356010	10"	2.75"	68	1.0"	27	50-3510	13"	X	X	X	X	N/A
4"	4"	4"	7"	2.00"	120	.625"	129	50-406010	10"	3.00"	46	1.00"	22	50-4010	13"	2.50"	55	1.50"	15	50-4012010
5"	5"	5"	7"	2.00"	105	.625"	170	50-506010	10"	3.00"	66	1.00"	47	50-5010	13"	4.00"	43	1.50"	18	50-5012010
6"	6"	6"	7"	2.00"	131	.625"	288	50-606010	10"	3.00"	82	1.00"	80	50-6010	13"	5.00"	49	1.50"	28	50-6012010
8"	8"	8"	7"	2.00"	165	.500"	591	50-806010	10"	3.00"	103	1.00"	165	50-8010	13"	5.50"	64	1.50"	58	50-8012010
10"	10"	10"	7"	2.00"	154	.430"	845	50-1006010	10"	3.00"	103	1.00"	248	50-10010	13"	5.50"	80	1.50"	110	50-10012010
12"	12"	12"	7"	2.00"	181	.375"	1368	50-1206010	10"	3.00"	121	.875"	405	50-12010	13"	5.50"	91	1.50"	171	50-12012010
14"	14"	14"	7"	2.00"	198	.375"	1788	50-1406010	10"	3.00"	132	.750"	530	50-14010	13"	5.50"	99	1.50"	223	50-14012010
16"	16"	16"	7"	2.00"	225	.250"	2623	50-1606010	10"	3.00"	150	.625"	777	50-16010	13"	5.50"	113	1.25"	328	50-16012010
18"	18"	18"	7"	2.00"	253	.250"	3684	50-1806010	10"	3.00"	168	.500"	1092	50-18010	13"	5.50"	126	1.13"	461	50-18012010
20"	20"	20"	7"	2.00"	280	.250"	4997	50-2006010	10"	3.00"	186	.500"	1480	50-20010	13"	5.25"	171	1.00"	783	50-20012010
22"	22"	22"	7"	2.00"	307	.188"	6587	50-2206010	10"	3.00"	204	.500"	1952	50-22010	13"	5.25"	187	.875"	1030	50-22012010
24"	24"	24"	7"	2.00"	333	.188"	8482	50-2406010	10"	3.00"	222	.500"	2513	50-24010	13"	5.25"	204	.750"	1324	50-24012010
26"	26"	26"	7"	2.00"	460	.188"	13907	50-2606010	10"	3.00"	298	.438"	4017	50-26010	13"	5.25"	220	.750"	1669	50-26012010
28"	28"	28"	7"	2.00"	494	.188"	17238	50-2806010	10"	3.00"	320	.375"	4980	50-28010	13"	5.25"	236	.750"	2070	50-28012010
30"	30"	30"	7"	2.00"	528	.125"	21059	50-3006010	10"	3.00"	342	.375"	6085	50-30010	13"	5.25"	253	.625"	2529	50-30012010
32"	32"	32"	7"	2.00"	562	.125"	25403	50-3206010	10"	3.00"	364	.313"	7342	50-32010	13"	5.25"	269	.625"	3051	50-32012010
34"	34"	34"	7"	2.00"	596	.063"	30304	50-3406010	10"	3.00"	386	.313"	8758	50-34010	13"	5.25"	285	.500"	3639	50-34012010
36"	36"	36"	7"	2.00"	433	.063"	24913	50-3606010	10"	3.00"	289	.250"	7382	50-36010	13"	5.25"	217	.500"	3114	50-36012010
38"	38"	38"	7"	2.00"	457	.063"	29152	50-3806010	10"	3.00"	304	.250"	8638	50-38010	13"	5.25"	228	.500"	3644	50-38012010
40"	40"	40"	7"	2.00"	480	.063"	33844	50-4006010	10"	3.00"	320	.250"	10028	50-40010	13"	5.25"	240	.500"	4231	50-40012010
42"	42"	42"	7"	2.00"	503	.063"	39013	50-4206010	10"	3.00"	335	.250"	11559	50-42010	13"	5.25"	252	.500"	4877	50-42012010
44"	44"	44"	7"	2.00"	526	.063"	44681	50-4406010	10"	3.00"	351	.250"	13239	50-44010	13"	5.25"	263	.500"	5585	50-44012010
46"	46"	46"	7"	2.00"	549	.063"	50863	50-4606010	10"	3.00"	366	.250"	15071	50-46010	13"	5.25"	275	.375"	6358	50-46012010
48"	48"	48"	7"	2.00"	572	.063"	57583	50-4806010	10"	3.00"	382	.250"	17062	50-48010	13"	5.25"	286	.375"	7198	50-48012010

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

ANSI REDUCING FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
 - 3- Fixed 150# drilled reducing ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
BELLOWS SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	4"	7"	1.50"	123	0.625	81	50-3064140	10"	2.00"	83	1.0"	24	50-3094140	13"	X	X	X	X	N/A
3"	3"	5"	7"	1.50"	123	0.625	81	50-3065140	10"	2.00"	83	1.0"	24	50-3095140	13"	X	X	X	X	N/A
4"	4"	5"	7"	2.00"	120	.625"	22	50-4065140	10"	2.00"	46	1.00"	22	50-4095140	13"	2.50"	55	1.50"	15	50-40125140
4"	4"	6"	7"	2.00"	120	.625"	22	50-4066140	10"	2.00"	46	1.00"	22	50-4096140	13"	2.50"	55	1.50"	15	50-40126140
4"	4"	8"	7"	2.00"	120	.625"	22	50-4068140	10"	2.00"	46	1.00"	22	50-4098140	13"	2.50"	55	1.50"	15	50-40128140
5"	5"	6"	7"	2.00"	105	.625"	47	50-5066140	10"	3.00"	66	1.00"	47	50-5096140	13"	4.00"	43	1.50"	18	50-50126140
5"	5"	8"	7"	2.00"	105	.625"	47	50-5068140	10"	3.00"	66	1.00"	47	50-5098140	13"	4.00"	43	1.50"	18	50-50128140
6"	6"	8"	7"	2.00"	131	.625"	80	60-6068140	10"	3.00"	82	1.00"	80	60-6098140	13"	5.00"	49	1.50"	28	60-60128140
6"	6"	10"	7"	2.00"	131	.625"	80	60-60610140	10"	3.00"	82	1.00"	80	60-60910140	13"	5.00"	49	1.50"	28	60-601210140
8"	8"	10"	7"	2.00"	165	.500"	165	50-80610140	10"	3.00"	103	1.00"	165	50-80910140	13"	5.50"	64	1.50"	58	50-801210140
8"	8"	12"	7"	2.00"	165	.500"	165	50-80612140	10"	3.00"	103	1.00"	165	50-80912140	13"	5.50"	64	1.50"	58	50-801212140
8"	8"	14"	7"	2.00"	165	.500"	165	50-80614140	10"	3.00"	103	1.00"	165	50-80914140	13"	5.50"	64	1.50"	58	50-801214140
8"	8"	16"	7"	2.00"	165	.500"	165	50-80616140	10"	3.00"	103	1.00"	165	50-80916140	13"	5.50"	64	1.50"	58	50-801216140
10"	10"	12"	7"	2.00"	154	.430"	248	50-100612140	10"	3.00"	103	1.00"	248	50-100912140	13"	5.50"	80	1.50"	110	50-1001212140
10"	10"	14"	7"	2.00"	154	.430"	248	50-100614140	10"	3.00"	103	1.00"	248	50-100914140	13"	5.50"	80	1.50"	110	50-1001214140
12"	12"	14"	7"	2.00"	181	.375"	405	50-120614140	10"	3.00"	121	.875"	405	50-120914140	13"	5.50"	91	1.50"	171	50-1201214140
12"	12"	16"	7"	2.00"	181	.375"	405	50-120616140	10"	3.00"	121	.875"	405	50-120916140	13"	5.50"	91	1.50"	171	50-1201216140
14"	14"	16"	7"	2.00"	198	.375"	530	50-140616140	10"	3.00"	132	.750"	530	50-140916140	13"	5.50"	99	1.50"	223	50-1401216140
14"	14"	18"	7"	2.00"	198	.375"	530	50-140618140	10"	3.00"	132	.750"	530	50-140918140	13"	5.50"	99	1.50"	223	50-1401218140
16"	16"	18"	7"	2.00"	225	.250"	777	50-160618140	10"	3.00"	150	.625"	777	50-160918140	13"	5.50"	113	1.25"	328	50-1601218140
16"	16"	20"	7"	2.00"	225	.250"	777	50-160620140	10"	3.00"	150	.625"	777	50-160920140	13"	5.50"	113	1.25"	328	50-1601220140
18"	18"	20"	7"	2.00"	253	.250"	1092	50-180620140	10"	3.00"	168	.500"	1092	50-180920140	13"	5.50"	126	1.13"	461	50-1801220140
18"	18"	22"	7"	2.00"	253	.250"	1092	50-180622140	10"	3.00"	168	.500"	1092	50-180922140	13"	5.50"	126	1.13"	461	50-1801222140
18"	18"	24"	7"	2.00"	253	.250"	1092	50-180624140	10"	3.00"	168	.500"	1092	50-180924140	13"	5.50"	126	1.13"	461	50-1801224140

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

ANSI FLANGE W/CONE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
 - 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
 - 4- Cone adapter T-304 stainless steel
 - 5- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
* Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
BELLOWS SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	4"	9"	1.50"	123	0.625"	81	50-3064150	12"	2.00"	83	1.0"	24	50-3094150	15"	X	X	X	X	N/A
3"	3"	5"	10"	1.50"	123	0.625"	81	50-3065150	13"	2.00"	83	1.0"	24	50-3095150	16"	X	X	X	X	N/A
4"	4"	5"	9"	2.00"	120	.625"	22	50-4065150	12"	2.00"	46	1.00"	22	50-4095150	15"	2.50"	55	1.50"	15	50-40125150
4"	4"	6"	10"	2.00"	120	.625"	22	50-4066150	13"	2.00"	46	1.00"	22	50-4096150	16"	2.50"	55	1.50"	15	50-40126150
4"	4"	8"	11"	2.00"	120	.625"	22	50-4068150	14"	2.00"	46	1.00"	22	50-4098150	17"	2.50"	55	1.50"	15	50-40128150
5"	5"	6"	9"	2.00"	105	.625"	47	50-5066150	12"	3.00"	66	1.00"	47	50-5096150	15"	4.00"	43	1.50"	18	50-50126150
5"	5"	8"	10"	2.00"	105	.625"	47	50-5068150	13"	3.00"	66	1.00"	47	50-5098150	16"	4.00"	43	1.50"	18	50-50128150
6"	6"	8"	9"	2.00"	131	.625"	80	60-6068150	12"	3.00"	82	1.00"	80	60-6098150	15"	5.00"	49	1.50"	28	60-60128150
6"	6"	10"	10"	2.00"	131	.625"	80	60-60610150	13"	3.00"	82	1.00"	80	60-60910150	16"	5.00"	49	1.50"	28	60-60120150
8"	8"	10"	9"	2.00"	165	.500"	165	50-80610150	12"	3.00"	103	1.00"	165	50-80910150	15"	5.50"	64	1.50"	58	50-80120150
8"	8"	12"	10"	2.00"	165	.500"	165	50-80612150	13"	3.00"	103	1.00"	165	50-80912150	16"	5.50"	64	1.50"	58	50-801212150
8"	8"	14"	11"	2.00"	165	.500"	165	50-80614150	14"	3.00"	103	1.00"	165	50-80914150	17"	5.50"	64	1.50"	58	50-801214150
8"	8"	16"	12"	2.00"	165	.500"	165	50-80616150	15"	3.00"	103	1.00"	165	50-80916150	18"	5.50"	64	1.50"	58	50-801216150
10"	10"	12"	9"	2.00"	154	.430"	248	50-100612150	12"	3.00"	103	1.00"	248	50-100912150	15"	5.50"	80	1.50"	110	50-1001212150
10"	10"	14"	10"	2.00"	154	.430"	248	50-100614150	13"	3.00"	103	1.00"	248	50-100914150	16"	5.50"	80	1.50"	110	50-1001214150
12"	12"	14"	9"	2.00"	181	.375"	405	50-120614150	12"	3.00"	121	.875"	405	50-120914150	15"	5.50"	91	1.50"	171	50-1201214150
12"	12"	16"	10"	2.00"	181	.375"	405	50-120616150	13"	3.00"	121	.875"	405	50-120916150	16"	5.50"	91	1.50"	171	50-1201216150
14"	14"	16"	9"	2.00"	198	.375"	530	50-140616150	12"	3.00"	132	.750"	530	50-140916150	15"	5.50"	99	1.50"	223	50-1401216150
14"	14"	18"	10"	2.00"	198	.375"	530	50-140618150	13"	3.00"	132	.750"	530	50-140918150	16"	5.50"	99	1.50"	223	50-1401218150
16"	16"	18"	9"	2.00"	225	.250"	777	50-160618150	12"	3.00"	150	.625"	777	50-160918150	15"	5.50"	113	1.25"	328	50-1601218150
16"	16"	20"	10"	2.00"	225	.250"	777	50-160620150	13"	3.00"	150	.625"	777	50-160920150	16"	5.50"	113	1.25"	328	50-1601220150
18"	18"	20"	9"	2.00"	253	.250"	1092	50-180620150	12"	3.00"	168	.500"	1092	50-180920150	15"	5.50"	126	1.13"	461	50-1801220150
18"	18"	22"	10"	2.00"	253	.250"	1092	50-180622150	13"	3.00"	168	.500"	1092	50-180922150	16"	5.50"	126	1.13"	461	50-1801222150
18"	18"	24"	11"	2.00"	253	.250"	1092	50-180624150	14"	3.00"	168	.500"	1092	50-180924150	17"	5.50"	126	1.13"	461	50-1801224150

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

ANSI FIXED X FLOATING FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
 - 3- Floating 150# drilled ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s vanstone stub end
 - 5- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 - * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	9"	1.50"	123	0.625	81	50-306020	12"	2.00"	83	1.0"	24	50-3020	15"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	9"	1.75"	107	0.625	94	50-356020	12"	2.75"	68	1.0"	27	50-3520	15"	X	X	X	X	N/A
4"	4"	4"	9"	2.00"	120	.625"	129	50-406020	12"	3.00"	46	1.00"	22	50-4020	15"	2.50"	55	1.50"	15	50-4012020
5"	5"	5"	9"	2.00"	105	.625"	170	50-506020	12"	3.00"	66	1.00"	47	50-5020	15"	4.00"	43	1.50"	18	50-5012020
6"	6"	6"	9"	2.00"	131	.625"	288	50-606020	12"	3.00"	82	1.00"	80	50-6020	15"	5.00"	49	1.50"	28	50-6012020
8"	8"	8"	9"	2.00"	165	.500"	591	50-806020	12"	3.00"	103	1.00"	165	50-8020	15"	5.50"	64	1.50"	58	50-8012020
10"	10"	10"	9"	2.00"	154	.430"	845	50-1006020	12"	3.00"	103	1.00"	248	50-10020	15"	5.50"	80	1.50"	110	50-10012020
12"	12"	12"	9"	2.00"	181	.375"	1368	50-1206020	12"	3.00"	121	.875"	405	50-12020	15"	5.50"	91	1.50"	171	50-12012020
14"	14"	14"	9"	2.00"	198	.375"	1788	50-1406020	12"	3.00"	132	.750"	530	50-14020	15"	5.50"	99	1.50"	223	50-14012020
16"	16"	16"	9"	2.00"	225	.250"	2623	50-1606020	12"	3.00"	150	.625"	777	50-16020	15"	5.50"	113	1.25"	328	50-16012020
18"	18"	18"	9"	2.00"	253	.250"	3684	50-1806020	12"	3.00"	168	.500"	1092	50-18020	15"	5.50"	126	1.13"	461	50-18012020
20"	20"	20"	9"	2.00"	280	.250"	4997	50-2006020	12"	3.00"	186	.500"	1480	50-20020	15"	5.25"	171	1.00"	783	50-20012020
22"	22"	22"	9"	2.00"	307	.188"	6587	50-2206020	12"	3.00"	204	.500"	1952	50-22020	15"	5.25"	187	.875"	1030	50-22012020
24"	24"	24"	9"	2.00"	333	.188"	8482	50-2406020	12"	3.00"	222	.500"	2513	50-24020	15"	5.25"	204	.750"	1324	50-24012020
26"	26"	26"	9"	2.00"	460	.188"	13907	50-2606020	12"	3.00"	298	.438"	4017	50-26020	15"	5.25"	220	.750"	1669	50-26012020
28"	28"	28"	9"	2.00"	494	.188"	17238	50-2806020	12"	3.00"	320	.375"	4980	50-28020	15"	5.25"	236	.750"	2070	50-28012020
30"	30"	30"	9"	2.00"	528	.125"	21059	50-3006020	12"	3.00"	342	.375"	6085	50-30020	15"	5.25"	253	.625"	2529	50-30012020
32"	32"	32"	9"	2.00"	562	.125"	25403	50-3206020	12"	3.00"	364	.313"	7342	50-32020	15"	5.25"	269	.625"	3051	50-32012020
34"	34"	34"	9"	2.00"	596	.063"	30304	50-3406020	12"	3.00"	386	.313"	8758	50-34020	15"	5.25"	285	.500"	3639	50-34012020
36"	36"	36"	9"	2.00"	433	.063"	24913	50-3606020	12"	3.00"	289	.250"	7382	50-36020	15"	5.25"	217	.500"	3114	50-36012020
38"	38"	38"	9"	2.00"	457	.063"	29152	50-3806020	12"	3.00"	304	.250"	8638	50-38020	15"	5.25"	228	.500"	3644	50-38012020
40"	40"	40"	9"	2.00"	480	.063"	33844	50-4006020	12"	3.00"	320	.250"	10028	50-40020	15"	5.25"	240	.500"	4231	50-40012020
42"	42"	42"	9"	2.00"	503	.063"	39013	50-4206020	12"	3.00"	335	.250"	11559	50-42020	15"	5.25"	252	.500"	4877	50-42012020
44"	44"	44"	9"	2.00"	526	.063"	44681	50-4406020	12"	3.00"	351	.250"	13239	50-44020	15"	5.25"	263	.500"	5585	50-44012020
46"	46"	46"	9"	2.00"	549	.063"	50863	50-4606020	12"	3.00"	366	.250"	15071	50-46020	15"	5.25"	275	.375"	6358	50-46012020
48"	48"	48"	9"	2.00"	572	.063"	57583	50-4806020	12"	3.00"	382	.250"	17062	50-48020	15"	5.25"	286	.375"	7198	50-48012020

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

ANSI FLOATING FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Floating 150# drilled ANSI inlet flange A-36 c/s
 - 3- Floating 150# drilled ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s vanstone stub ends
 - 5- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 - * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	10"	1.50"	123	0.625	81	50-306030	13"	2.00"	83	1.0"	24	50-309030	16"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	10"	1.75"	107	0.625	94	50-356030	13"	2.75"	68	1.0"	27	50-359030	16"	X	X	X	X	N/A
4"	4"	4"	10"	2.00"	120	.625"	129	50-406030	13"	3.00"	46	1.00"	22	50-409030	16"	2.50"	55	1.50"	15	50-4012030
5"	5"	5"	10"	2.00"	105	.625"	170	50-506030	13"	3.00"	66	1.00"	47	50-509030	16"	4.00"	43	1.50"	18	50-5012030
6"	6"	6"	10"	2.00"	131	.625"	288	50-606030	13"	3.00"	82	1.00"	80	50-609030	16"	5.00"	49	1.50"	28	50-6012030
8"	8"	8"	10"	2.00"	165	.500"	591	50-806030	13"	3.00"	103	1.00"	165	50-809030	16"	5.50"	64	1.50"	58	50-8012030
10"	10"	10"	10"	2.00"	154	.430"	845	50-1006030	13"	3.00"	103	1.00"	248	50-1009030	16"	5.50"	80	1.50"	110	50-10012030
12"	12"	12"	10"	2.00"	181	.375"	1368	50-1206030	13"	3.00"	121	.875"	405	50-1209030	16"	5.50"	91	1.50"	171	50-12012030
14"	14"	14"	10"	2.00"	198	.375"	1788	50-1406030	13"	3.00"	132	.750"	530	50-1409030	16"	5.50"	99	1.50"	223	50-14012030
16"	16"	16"	10"	2.00"	225	.250"	2623	50-1606030	13"	3.00"	150	.625"	777	50-1609030	16"	5.50"	113	1.25"	328	50-16012030
18"	18"	18"	10"	2.00"	253	.250"	3684	50-1806030	13"	3.00"	168	.500"	1092	50-1809030	16"	5.50"	126	1.13"	461	50-18012030
20"	20"	20"	10"	2.00"	280	.250"	4997	50-2006030	13"	3.00"	186	.500"	1480	50-2009030	16"	5.25"	171	1.00"	783	50-20012030
22"	22"	22"	10"	2.00"	307	.188"	6587	50-2206030	13"	3.00"	204	.500"	1952	50-2209030	16"	5.25"	187	.875"	1030	50-22012030
24"	24"	24"	10"	2.00"	333	.188"	8482	50-2506030	13"	3.00"	222	.500"	2513	50-2509030	16"	5.25"	204	.750"	1324	50-25012030
26"	26"	26"	10"	2.00"	460	.188"	13907	50-2606030	13"	3.00"	298	.438"	4017	50-2609030	16"	5.25"	220	.750"	1669	50-26012030
28"	28"	28"	10"	2.00"	494	.188"	17238	50-2806030	13"	3.00"	320	.375"	4980	50-2809030	16"	5.25"	236	.750"	2070	50-28012030
30"	30"	30"	10"	2.00"	528	.125"	21059	50-3006030	13"	3.00"	342	.375"	6085	50-3009030	16"	5.25"	253	.625"	2529	50-30012030
32"	32"	32"	10"	2.00"	562	.125"	25403	50-3206030	13"	3.00"	364	.313"	7342	50-3209030	16"	5.25"	269	.625"	3051	50-32012030
34"	34"	34"	10"	2.00"	596	.063"	30304	50-3406030	13"	3.00"	386	.313"	8758	50-3409030	16"	5.25"	285	.500"	3639	50-34012030
36"	36"	36"	10"	2.00"	433	.063"	24913	50-3606030	13"	3.00"	289	.250"	7382	50-3609030	16"	5.25"	217	.500"	3114	50-36012030
38"	38"	38"	10"	2.00"	457	.063"	29152	50-3806030	13"	3.00"	304	.250"	8638	50-3809030	16"	5.25"	228	.500"	3644	50-38012030
40"	40"	40"	10"	2.00"	480	.063"	33844	50-4006030	13"	3.00"	320	.250"	10028	50-4009030	16"	5.25"	240	.500"	4231	50-40012030
42"	42"	42"	10"	2.00"	503	.063"	39013	50-4206030	13"	3.00"	335	.250"	11559	50-4209030	16"	5.25"	252	.500"	4877	50-42012030
44"	44"	44"	10"	2.00"	526	.063"	44681	50-4406030	13"	3.00"	351	.250"	13239	50-4409030	16"	5.25"	263	.500"	5585	50-44012030
46"	46"	46"	10"	2.00"	549	.063"	50863	40-4606030	13"	3.00"	366	.250"	15071	40-4609030	16"	5.25"	275	.375"	6358	40-46012030
48"	48"	48"	10"	2.00"	572	.063"	57583	50-4806030	13"	3.00"	382	.250"	17062	50-4809030	16"	5.25"	286	.375"	7198	50-48012030

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

ANSI MAX FLOW FIXED FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows (oversized)
 - 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
 - 3- Fixed 150# drilled reducing ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
BELLOWS SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
5"	5"	5"	13"	2.00"	131	.625"	288	50-5065110	16"	3.00"	82	1.00"	80	50-5095110	19"	5.00"	49	1.50"	28	50-50125110
5"	5"	6"	13"	2.00"	131	.625"	288	50-5066110	16"	3.00"	82	1.00"	80	50-5096110	19"	5.00"	49	1.50"	28	50-50126110
5"	5"	8"	13"	2.00"	131	.625"	288	50-5068110	16"	3.00"	82	1.00"	80	50-5098110	19"	5.00"	49	1.50"	28	50-50128110
6"	6"	6"	13"	2.00"	165	.500"	591	50-6066110	16"	3.00"	103	1.00"	165	50-6096110	19"	5.50"	64	1.50"	58	50-60126110
6"	6"	8"	13"	2.00"	165	.500"	591	50-6068110	16"	3.00"	103	1.00"	165	50-6098110	19"	5.50"	64	1.50"	58	50-60128110
6"	6"	10"	13"	2.00"	165	.500"	591	50-60610110	16"	3.00"	103	1.00"	165	50-60690110	19"	5.50"	64	1.50"	58	50-601210110
8"	8"	8"	13"	2.00"	154	.430"	845	50-8068110	16"	3.00"	103	1.00"	248	50-8069110	19"	5.50"	80	1.50"	110	50-80128110
8"	8"	10"	13"	2.00"	154	.430"	845	50-80610110	16"	3.00"	103	1.00"	248	50-80910110	19"	5.50"	80	1.50"	110	50-801210110
8"	8"	12"	13"	2.00"	154	.430"	845	50-80612110	16"	3.00"	103	1.00"	248	50-80912110	19"	5.50"	80	1.50"	110	50-801212110
8"	8"	14"	13"	2.00"	154	.430"	845	50-80614110	16"	3.00"	103	1.00"	248	50-80914110	19"	5.50"	80	1.50"	110	50-801214110
10"	10"	10"	13"	2.00"	181	.375"	1369	50-100610110	16"	3.00"	121	.875"	405	50-100910110	19"	5.50"	91	1.50"	171	50-1001210110
10"	10"	12"	13"	2.00"	181	.375"	1368	50-100612110	16"	3.00"	121	.875"	405	50-100912110	19"	5.50"	91	1.50"	171	50-1001212110
10"	10"	14"	13"	2.00"	181	.375"	1368	50-100614110	16"	3.00"	121	.875"	405	50-100914110	19"	5.50"	91	1.50"	171	50-1001214110
12"	12"	12"	13"	2.00"	198	.375"	1788	50-120612110	16"	3.00"	132	.750"	530	50-120912110	19"	5.50"	99	1.50"	223	50-1201212110
12"	12"	14"	13"	2.00"	198	.375"	1788	50-120614110	16"	3.00"	132	.750"	530	50-120914110	19"	5.50"	99	1.50"	223	50-1201214110
12"	12"	16"	13"	2.00"	198	.375"	1788	50-120616110	16"	3.00"	132	.750"	530	50-120916110	19"	5.50"	99	1.50"	223	50-1201216110
14"	14"	14"	13"	2.00"	225	.250"	2623	50-140614110	16"	3.00"	150	.625"	777	50-140914110	19"	5.50"	113	1.25"	328	50-1401214110
14"	14"	16"	13"	2.00"	225	.250"	2623	50-140616110	16"	3.00"	150	.625"	777	50-140916110	19"	5.50"	113	1.25"	328	50-1401216110
14"	14"	18"	13"	2.00"	225	.250"	2623	50-140618110	16"	3.00"	150	.625"	777	50-140918110	19"	5.50"	113	1.25"	328	50-1401218110
16"	16"	16"	13"	2.00"	253	.250"	3684	50-160616110	16"	3.00"	168	.500"	1092	50-160916110	19"	5.50"	126	1.13"	461	50-1601216110
16"	16"	18"	13"	2.00"	253	.250"	3684	50-160618110	16"	3.00"	168	.500"	1092	50-160918110	19"	5.50"	126	1.13"	461	50-1601218110
18"	18"	18"	13"	2.00"	280	.250"	4997	50-180618110	16"	3.00"	186	.500"	1480	50-180918110	19"	5.25"	171	1.00"	783	50-1801218110
18"	18"	20"	13"	2.00"	280	.250"	4997	50-180620110	16"	3.00"	186	.500"	1480	50-180920110	19"	5.25"	171	1.00"	783	50-1801220110
20"	20"	20"	13"	2.00"	307	.188"	6587	50-200620110	16"	3.00"	204	.500"	1952	50-200920110	19"	5.25"	187	.875"	1030	50-2001220110
20"	20"	22"	13"	2.00"	307	.188"	6587	50-200622110	16"	3.00"	204	.500"	1952	50-200922110	19"	5.25"	187	.875"	1030	50-2001222110

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

ANSI MAX FLOW FLOATING FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows (oversized)
 - 2- Floating 150# drilled ANSI inlet flange A-36 c/s
 - 3- Floating 150# drilled ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
* Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
BELLOWS SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
5"	5"	5"	13"	2.00"	131	.625"	288	50-5065120	16"	3.00"	82	1.00"	80	50-5095120	19"	5.00"	49	1.50"	28	50-50125120
5"	5"	6"	13"	2.00"	131	.625"	288	50-5066120	16"	3.00"	82	1.00"	80	50-5096120	19"	5.00"	49	1.50"	28	50-50126120
5"	5"	8"	13"	2.00"	131	.625"	288	50-5068120	16"	3.00"	82	1.00"	80	50-5098120	19"	5.00"	49	1.50"	28	50-50128120
6"	6"	6"	13"	2.00"	165	.500"	591	50-6066120	16"	3.00"	103	1.00"	165	50-6096120	19"	5.50"	64	1.50"	58	50-60126120
6"	6"	8"	13"	2.00"	165	.500"	591	50-6068120	16"	3.00"	103	1.00"	165	50-6098120	19"	5.50"	64	1.50"	58	50-60128120
6"	6"	10"	13"	2.00"	165	.500"	591	50-60610120	16"	3.00"	103	1.00"	165	50-6090120	19"	5.50"	64	1.50"	58	50-601210120
8"	8"	8"	13"	2.00"	154	.430"	845	50-8068120	16"	3.00"	103	1.00"	248	50-8098120	19"	5.50"	80	1.50"	110	50-80128120
8"	8"	10"	13"	2.00"	154	.430"	845	50-80610120	16"	3.00"	103	1.00"	248	50-80910120	19"	5.50"	80	1.50"	110	50-801210120
8"	8"	12"	13"	2.00"	154	.430"	845	50-80612120	16"	3.00"	103	1.00"	248	50-80912120	19"	5.50"	80	1.50"	110	50-801212120
8"	8"	14"	13"	2.00"	154	.430"	845	50-80614120	16"	3.00"	103	1.00"	248	50-80914120	19"	5.50"	80	1.50"	110	50-801214120
10"	10"	10"	13"	2.00"	181	.375"	1369	50-100610120	16"	3.00"	121	.875"	405	50-100910120	19"	5.50"	91	1.50"	171	50-1001210120
10"	10"	12"	13"	2.00"	181	.375"	1368	50-100612120	16"	3.00"	121	.875"	405	50-100912120	19"	5.50"	91	1.50"	171	50-1001212120
10"	10"	14"	13"	2.00"	181	.375"	1368	50-100614120	16"	3.00"	121	.875"	405	50-100914120	19"	5.50"	91	1.50"	171	50-1001214120
12"	12"	12"	13"	2.00"	198	.375"	1788	50-120612120	16"	3.00"	132	.750"	530	50-120912120	19"	5.50"	99	1.50"	223	50-1201212120
12"	12"	14"	13"	2.00"	198	.375"	1788	50-120614120	16"	3.00"	132	.750"	530	50-120914120	19"	5.50"	99	1.50"	223	50-1201214120
12"	12"	16"	13"	2.00"	198	.375"	1788	50-120616120	16"	3.00"	132	.750"	530	50-120916120	19"	5.50"	99	1.50"	223	50-1201216120
14"	14"	14"	13"	2.00"	225	.250"	2623	50-140614120	16"	3.00"	150	.625"	777	50-140914120	19"	5.50"	113	1.25"	328	50-1401214120
14"	14"	16"	13"	2.00"	225	.250"	2623	50-140616120	16"	3.00"	150	.625"	777	50-140916120	19"	5.50"	113	1.25"	328	50-1401216120
14"	14"	18"	13"	2.00"	225	.250"	2623	50-140618120	16"	3.00"	150	.625"	777	50-140918120	19"	5.50"	113	1.25"	328	50-1401218120
16"	16"	16"	13"	2.00"	253	.250"	3684	50-160616120	16"	3.00"	168	.500"	1092	50-160916120	19"	5.50"	126	1.13"	461	50-1601216120
16"	16"	18"	13"	2.00"	253	.250"	3684	50-160618120	16"	3.00"	168	.500"	1092	50-160918120	19"	5.50"	126	1.13"	461	50-1601218120
18"	18"	18"	13"	2.00"	280	.250"	4997	50-180618120	16"	3.00"	186	.500"	1480	50-180918120	19"	5.25"	171	1.00"	783	50-1801218120
18"	18"	20"	13"	2.00"	280	.250"	4997	50-180620120	16"	3.00"	186	.500"	1480	50-180920120	19"	5.25"	171	1.00"	783	50-1801220120
20"	20"	20"	13"	2.00"	307	.188"	6587	50-200620120	16"	3.00"	204	.500"	1952	50-200920120	19"	5.25"	187	.875"	1030	50-2001220120
20"	20"	22"	13"	2.00"	307	.188"	6587	50-200622120	16"	3.00"	204	.500"	1952	50-200922120	19"	5.25"	187	.875"	1030	50-2001222120

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

CUMMINS INLET FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Floating Cummins inlet flange A-36 c/s
 - 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS							9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
BELLOWS SIZE	INLET (CUMMINS)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	
5"	5"	5"	9"	2.00"	104	.625"	138	50-5065160	12"	3.00"	64	1.00"	39	50-5095160	15"	3.25"	40	1.50"	13	50-50125160	
5"	5"	6"	9"	2.00"	104	.625"	138	50-5066160	12"	3.00"	64	1.00"	39	50-5096160	15"	3.25"	40	1.50"	13	50-50126160	
5"	5"	8"	9"	2.00"	104	.625"	138	50-5068160	12"	3.00"	64	1.00"	39	50-5098160	15"	3.25"	40	1.50"	13	50-50128160	
6"	6"	6"	9"	2.00"	119	.625"	220	50-6066160	12"	3.00"	75	1.00"	62	50-6096160	15"	4.50"	46	1.50"	21	50-60126160	
6"	6"	8"	9"	2.00"	119	.625"	220	50-6068160	12"	3.00"	75	1.00"	62	50-6098160	15"	4.50"	46	1.50"	21	50-60128160	
6"	6"	10"	9"	2.00"	119	.625"	220	50-60610160	12"	3.00"	75	1.00"	62	50-60910160	15"	4.50"	46	1.50"	21	50-601210160	

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

DETROIT-MTU INLET FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Floating Detroit-MTU inlet flange A-36 c/s
- 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
- 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
BELLOWS SIZE	INLET (DETROIT-MTU)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
8"	8"	8"	9"	2.00"	153	.500"	476	50-8068250	12"	3.00"	97	1.00"	136	50-808250	15"	5.50"	59	1.50"	46	50-80128250
8"	8"	10"	9"	2.00"	153	.500"	476	50-80610250	12"	3.00"	97	1.00"	136	50-8010250	15"	5.50"	59	1.50"	46	50-801210250
8"	8"	12"	9"	2.00"	153	.500"	476	50-80612250	12"	3.00"	97	1.00"	136	50-8012250	15"	5.50"	59	1.50"	46	50-801212250
10"	10"	10"	9"	2.00"	145	.500"	691	50-100610250	12"	3.00"	96	1.00"	205	50-10010250	15"	5.50"	72	1.50"	86	50-1001210250
10"	10"	12"	9"	2.00"	145	.500"	691	50-100612250	12"	3.00"	96	1.00"	205	50-10012250	15"	5.50"	72	1.50"	86	50-1001212250
10"	10"	14"	9"	2.00"	145	.500"	691	50-100614250	12"	3.00"	96	1.00"	205	50-10014250	15"	5.50"	72	1.50"	86	50-1001214250

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F



CAT STYLE INLET FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Floating CAT style inlet flange A-36 c/s
- 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
- 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
BELLWS SIZE	INLET (CAT)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
4"	4"	5"	9"	1.75"	107	.625"	94	50-4065170	12"	2.75"	68	1.00"	27	50-4095170	15"	2.00"	50	1.5	11	50-40125170
4"	4"	6"	9"	1.75"	107	.625"	94	50-4066170	12"	2.75"	68	1.00"	27	50-4096170	15"	2.00"	50	1.5	11	50-40126170
5"	5"	5"	9"	2.00"	104	.625"	138	50-5065170	12"	3.00"	64	1.00"	39	50-5095170	15"	3.25"	40	1.50"	13	50-50125170
5"	5"	6"	9"	2.00"	104	.625"	138	50-5066170	12"	3.00"	64	1.00"	39	50-5096170	15"	3.25"	40	1.50"	13	50-50126170
5"	5"	8"	9"	2.00"	104	.625"	138	50-5068170	12"	3.00"	64	1.00"	39	50-5098170	15"	3.25"	40	1.50"	13	50-50128170
6"	6"	6"	9"	2.00"	119	.625"	220	50-6066170	12"	3.00"	75	1.00"	62	50-6096170	15"	4.50"	46	1.50"	21	50-60126170
6"	6"	8"	9"	2.00"	119	.625"	220	50-6068170	12"	3.00"	75	1.00"	62	50-6098170	15"	4.50"	46	1.50"	21	50-60128170
6"	6"	10"	9"	2.00"	119	.625"	220	50-50610170	12"	3.00"	75	1.00"	62	50-50910170	15"	4.50"	46	1.50"	21	50-501210170
8"	8"	8"	9"	2.00"	153	.500"	476	50-8068170	12"	3.00"	97	1.00"	139	50-8098170	15"	5.50"	59	1.50"	46	50-80128170
8"	8"	10"	9"	2.00"	153	.500"	476	50-80610170	12"	3.00"	97	1.00"	136	50-80910170	15"	5.50"	59	1.50"	46	50-801210170
8"	8"	12"	9"	2.00"	153	.500"	476	50-80612170	12"	3.00"	97	1.00"	136	50-80912170	15"	5.50"	59	1.50"	46	50-801212170
8"	8"	14"	9"	2.00"	153	.500"	476	50-80614170	12"	3.00"	97	1.00"	136	50-80914170	15"	5.50"	59	1.50"	46	50-801214170
10"	10"	10"	9"	2.00"	145	.500"	691	80-100610170	12"	3.00"	96	1.00"	205	80-100910170	15"	5.50"	72	1.50"	86	80-1001210170
10"	10"	12"	9"	2.00"	145	.500"	691	50-100612170	12"	3.00"	96	1.00"	205	50-100912170	15"	5.50"	72	1.50"	86	50-1001212170
10"	10"	14"	9"	2.00"	145	.500"	691	50-100614170	12"	3.00"	96	1.00"	205	50-100914170	15"	5.50"	72	1.50"	86	50-1001214170
12"	12"	12"	9"	2.00"	171	.430"	1151	50-120612170	12"	3.00"	113	.875"	338	50-120912170	15"	5.50"	85	1.50"	144	50-1201212170
12"	12"	14"	9"	2.00"	171	.430"	1151	50-120614170	12"	3.00"	113	.875"	338	50-120914170	15"	5.50"	85	1.50"	144	50-1201214170
12"	12"	16"	9"	2.00"	171	.430"	1151	50-120616170	12"	3.00"	113	.875"	338	50-120916170	15"	5.50"	85	1.50"	144	50-1201216170
14"	14"	14"	9"	2.00"	198	.375"	1788	50-140614170	12"	3.00"	132	.750"	530	50-140914170	15"	5.50"	99	1.50"	223	50-1401214170
14"	14"	16"	9"	2.00"	198	.375"	1788	50-140616170	12"	3.00"	132	.750"	530	50-140916170	15"	5.50"	99	1.50"	223	50-1401216170
14"	14"	18"	9"	2.00"	198	.375"	1788	50-140618170	12"	3.00"	132	.750"	530	50-140918170	15"	5.50"	99	1.50"	223	50-1401218170
16"	16"	16"	9"	2.00"	225	.250"	2623	50-160616170	12"	3.00"	150	.625"	777	50-160916170	15"	5.50"	113	1.25"	328	50-1601216170
16"	16"	18"	9"	2.00"	225	.250"	2623	50-160618170	12"	3.00"	150	.625"	777	50-160918170	15"	5.50"	113	1.25"	328	50-1601218170
18"	18"	18"	9"	2.00"	253	.250"	3684	50-180618170	12"	3.00"	168	.500"	1092	50-180918170	15"	5.50"	126	1.13"	461	50-1801218170
18"	18"	20"	9"	2.00"	253	.250"	3684	50-180620170	12"	3.00"	168	.500"	1092	50-180920170	15"	5.50"	126	1.13"	461	50-1801220170
18"	18"	22"	9"	2.00"	253	.250"	3684	50-180622170	12"	3.00"	168	.500"	1092	50-180922170	15"	5.50"	126	1.13"	461	50-1801222170

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

CAT STYLE INLET FLANGE CONE ANSI OUTLET EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Floating CAT style inlet flange A-36 c/s
- 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
- 4- Cone adapter T-304 stainless steel
- 5- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (CAT)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
4"	4"	5"	9"	1.75"	107	.625"	94	50-4065180	12"	2.75"	68	1.00"	27	50-4095180	15"	2.00"	50	1.5"	11	50-40125180
4"	4"	6"	9"	1.75"	107	.625"	94	50-4066180	12"	2.75"	68	1.00"	27	50-4096180	15"	2.00"	50	1.5"	11	50-40126180
5"	5"	6"	9"	2.00"	104	.625"	138	50-5066180	12"	3.00"	64	1.00"	39	50-5096180	15"	3.25"	40	1.50"	13	50-50126180
5"	5"	8"	9"	2.00"	104	.625"	138	50-5068180	12"	3.00"	64	1.00"	39	50-5098180	15"	3.25"	40	1.50"	13	50-50128180
6"	6"	8"	9"	2.00"	119	.625"	220	50-6068180	12"	3.00"	75	1.00"	62	50-6098180	15"	4.50"	46	1.50"	21	50-60128180
6"	6"	10"	9"	2.00"	153	.500"	476	50-60610180	12"	3.00"	97	1.00"	139	50-60910180	15"	5.50"	59	1.50"	46	50-501210180
8"	8"	10"	9"	2.00"	153	.500"	476	50-80610180	12"	3.00"	97	1.00"	136	50-80910180	15"	5.50"	59	1.50"	46	50-801210180
8"	8"	12"	9"	2.00"	153	.500"	476	50-80612180	12"	3.00"	97	1.00"	136	50-80912180	15"	5.50"	59	1.50"	46	50-801212180
8"	8"	14"	9"	2.00"	153	.500"	476	50-80614180	12"	3.00"	97	1.00"	136	50-80914180	15"	5.50"	59	1.50"	46	50-801214180
10"	10"	12"	9"	2.00"	145	.500"	691	50-100612180	12"	3.00"	96	1.00"	205	50-100912180	15"	5.50"	72	1.50"	86	50-1001212180
10"	10"	14"	9"	2.00"	145	.500"	691	50-100614180	12"	3.00"	96	1.00"	205	50-100914180	15"	5.50"	72	1.50"	86	50-1001214180
12"	12"	14"	9"	2.00"	171	.430"	1151	50-120614180	12"	3.00"	113	.875"	338	50-120914180	15"	5.50"	85	1.50"	144	50-1201214180
12"	12"	16"	9"	2.00"	171	.430"	1151	50-120616180	12"	3.00"	113	.875"	338	50-120916180	15"	5.50"	85	1.50"	144	50-1201216180
14"	14"	16"	9"	2.00"	198	.375"	1788	50-140616180	12"	3.00"	132	.750"	530	50-140916180	15"	5.50"	99	1.50"	223	50-1401216180
14"	14"	18"	9"	2.00"	198	.375"	1788	50-140618180	12"	3.00"	132	.750"	530	50-140918180	15"	5.50"	99	1.50"	223	50-1401218180
16"	16"	18"	9"	2.00"	225	.250"	2623	50-160618180	12"	3.00"	150	.625"	777	50-160918180	15"	5.50"	113	1.25"	328	50-1601218180
18"	18"	20"	9"	2.00"	253	.250"	3684	50-180620180	12"	3.00"	168	.500"	1092	50-180920180	15"	5.50"	126	1.13"	461	50-1801220180
18"	18"	22"	9"	2.00"	253	.250"	3684	50-180622180	12"	3.00"	168	.500"	1092	50-180922180	15"	5.50"	126	1.13"	461	50-1801222180

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

CAT MAX FLOW FIXED X FLOAT EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows (oversized)
- 2- Floating cat inlet flange A-36 c/s
- 3- Fixed 150# drilled reducing ANSI outlet flange A-36 c/s
- 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
BELLOWS SIZE	INLET (CAT)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
4"	4"	4"	13"	2.00"	105	.625"	170	50-4064190	16"	3.00"	66	1.00"	47	50-4094190	19"	4.00"	43	1.50"	18	50-40124190
4"	4"	5"	13"	2.00"	105	.625"	170	50-4065190	16"	3.00"	66	1.00"	47	50-4095190	19"	4.00"	43	1.50"	18	50-40125190
4"	4"	6"	13"	2.00"	105	.625"	170	50-4066190	16"	3.00"	66	1.00"	47	50-4096190	19"	4.00"	43	1.50"	18	50-40126190
5"	5"	5"	13"	2.00"	131	.625"	288	50-5065190	16"	3.00"	82	1.00"	80	50-5095190	19"	5.00"	49	1.50"	28	50-50125190
5"	5"	6"	13"	2.00"	131	.625"	288	50-5066190	16"	3.00"	82	1.00"	80	50-5096190	19"	5.00"	49	1.50"	28	50-50126190
5"	5"	8"	13"	2.00"	131	.625"	288	50-5068190	16"	3.00"	82	1.00"	80	50-5098190	19"	5.00"	49	1.50"	28	50-50128190
6"	6"	6"	13"	2.00"	165	.500"	591	50-6066190	16"	3.00"	103	1.00"	165	50-6096190	19"	5.50"	64	1.50"	58	50-60126190
6"	6"	8"	13"	2.00"	165	.500"	591	50-6068190	16"	3.00"	103	1.00"	165	50-6098190	19"	5.50"	64	1.50"	58	50-60128190
6"	6"	10"	13"	2.00"	165	.500"	591	50-50610190	16"	3.00"	103	1.00"	165	50-50910190	19"	5.50"	64	1.50"	58	50-501210190
8"	8"	8"	13"	2.00"	154	.430"	845	50-8068190	16"	3.00"	103	1.00"	248	50-8098190	19"	5.50"	80	1.50"	110	50-80128190
8"	8"	10"	13"	2.00"	154	.430"	845	50-80610190	16"	3.00"	103	1.00"	248	50-80910190	19"	5.50"	80	1.50"	110	50-801210190
8"	8"	12"	13"	2.00"	154	.430"	845	50-80612190	16"	3.00"	103	1.00"	248	50-80912190	19"	5.50"	80	1.50"	110	50-801212190
8"	8"	14"	13"	2.00"	154	.430"	845	50-80614190	16"	3.00"	103	1.00"	248	50-80914190	19"	5.50"	80	1.50"	110	50-801214190
10"	10"	10"	13"	2.00"	181	.375"	1369	80-100610190	16"	3.00"	121	.875"	405	80-100910190	19"	5.50"	91	1.50"	171	80-1001210190
10"	10"	12"	13"	2.00"	181	.375"	1368	50-100612190	16"	3.00"	121	.875"	405	50-100912190	19"	5.50"	91	1.50"	171	50-1001212190
10"	10"	14"	13"	2.00"	181	.375"	1368	50-100614190	16"	3.00"	121	.875"	405	50-100914190	19"	5.50"	91	1.50"	171	50-1001214190
12"	12"	12"	13"	2.00"	198	.375"	1788	50-120612190	16"	3.00"	132	.750"	530	50-120912190	19"	5.50"	99	1.50"	223	50-1201212190
12"	12"	14"	13"	2.00"	198	.375"	1788	50-120614190	16"	3.00"	132	.750"	530	50-120914190	19"	5.50"	99	1.50"	223	50-1201214190
12"	12"	16"	13"	2.00"	198	.375"	1788	50-120616190	16"	3.00"	132	.750"	530	50-120916190	19"	5.50"	99	1.50"	223	50-1201216190
14"	14"	14"	13"	2.00"	225	.250"	2623	50-140614190	16"	3.00"	150	.625"	777	50-140914190	19"	5.50"	113	1.25"	328	50-1401214190
14"	14"	16"	13"	2.00"	225	.250"	2623	50-140616190	16"	3.00"	150	.625"	777	50-140916190	19"	5.50"	113	1.25"	328	50-1401216190
14"	14"	18"	13"	2.00"	225	.250"	2623	50-140618190	16"	3.00"	150	.625"	777	50-140918190	19"	5.50"	113	1.25"	328	50-1401218190
16"	16"	16"	13"	2.00"	253	.250"	3684	50-160616190	16"	3.00"	168	.500"	1092	50-160916190	19"	5.50"	126	1.13"	461	50-1601216190
16"	16"	18"	13"	2.00"	253	.250"	3684	50-160618190	16"	3.00"	168	.500"	1092	50-160918190	19"	5.50"	126	1.13"	461	50-1601218190
18"	18"	18"	13"	2.00"	280	.250"	4997	50-180618190	16"	3.00"	186	.500"	1480	50-180918190	19"	5.25"	171	1.00"	783	50-1801218190
18"	18"	20"	13"	2.00"	280	.250"	4997	50-180620190	16"	3.00"	186	.500"	1480	50-180920190	19"	5.25"	171	1.00"	783	50-1801220190

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

WAUKESHA INLET FLANGE EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- Waukesha lip flange T-321 stainless
 - 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
 - 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
* Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
SIZE	INLET (WAUKESHA)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
5"	5"	5"	8"	2.00"	104	.625"	138	50-50-6550	11"	3.00"	64	1.00"	39	50-50-9550	14"	3.25"	40	1.50"	13	50-50-12550
5"	5"	6"	8"	2.00"	104	.625"	138	50-50-6650	11"	3.00"	64	1.00"	39	50-50-9650	14"	3.25"	40	1.50"	13	50-50-12650
5"	5"	8"	8"	2.00"	104	.625"	138	50-50-6850	11"	3.00"	64	1.00"	39	50-50-9850	14"	3.25"	40	1.50"	13	50-50-12850
6"	6"	6"	8"	2.00"	119	.625"	220	50-60-6650	11"	3.00"	75	1.00"	62	50-60-9650	14"	4.50"	46	1.50"	21	50-60-12650
6"	6"	8"	8"	2.00"	119	.625"	220	50-60-6850	11"	3.00"	75	1.00"	62	50-60-9850	14"	4.50"	46	1.50"	21	50-60-12850
6"	6"	10"	8"	2.00"	119	.625"	220	50-60-61050	11"	3.00"	75	1.00"	62	50-60-91050	14"	4.50"	46	1.50"	21	50-60-121050
8"	8"	8"	8"	2.00"	153	.500"	476	50-80-6850	11"	3.00"	97	1.00"	139	50-80-9850	14"	5.50"	59	1.50"	46	50-80-12850
8"	8"	10"	8"	2.00"	153	.500"	476	50-80-61050	11"	3.00"	97	1.00"	136	50-80-91050	14"	5.50"	59	1.50"	46	50-80-121050
8"	8"	12"	8"	2.00"	153	.500"	476	50-80-61250	11"	3.00"	97	1.00"	136	50-80-91250	14"	5.50"	59	1.50"	46	50-80-121250
8"	8"	14"	8"	2.00"	153	.500"	476	50-80-61450	11"	3.00"	97	1.00"	136	50-80-91450	14"	5.50"	59	1.50"	46	50-80-121450
10"	10"	10"	8"	2.00"	145	.500"	691	50-100-61050	11"	3.00"	96	1.00"	205	50-100-91050	14"	5.50"	72	1.50"	86	50-100-121050
10"	10"	12"	8"	2.00"	145	.500"	691	50-100-61250	11"	3.00"	96	1.00"	205	50-100-91250	14"	5.50"	72	1.50"	86	50-100-121250
10"	10"	14"	8"	2.00"	145	.500"	691	50-100-61450	11"	3.00"	96	1.00"	205	50-100-91450	14"	5.50"	72	1.50"	86	50-100-121450
12"	12"	12"	8"	2.00"	171	.430"	1151	50-120-61250	11"	3.00"	113	.875"	338	50-120-91250	14"	5.50"	85	1.50"	144	50-120-121250
12"	12"	14"	8"	2.00"	171	.430"	1151	50-120-61450	11"	3.00"	113	.875"	338	50-120-91450	14"	5.50"	85	1.50"	144	50-120-121450
12"	12"	16"	8"	2.00"	171	.430"	1151	50-120-61650	11"	3.00"	113	.875"	338	50-120-91650	14"	5.50"	85	1.50"	144	50-120-121650
14"	14"	14"	8"	2.00"	198	.375"	1788	50-140-61450	11"	3.00"	132	.750"	530	50-140-91450	14"	5.50"	99	1.50"	223	50-140-121450
14"	14"	16"	8"	2.00"	198	.375"	1788	50-140-61650	11"	3.00"	132	.750"	530	50-140-91650	14"	5.50"	99	1.50"	223	50-140-121650
14"	14"	18"	8"	2.00"	198	.375"	1788	50-140-61850	11"	3.00"	132	.750"	530	50-140-91850	14"	5.50"	99	1.50"	223	50-140-121850

Custom lengths available

* Movements are non-concurrent
Stainless flanges available on request for 1200°F temperature rating
Flow liners may be required. See EJMA 10 guidelines
Hastelloy X and Inconel 625 available for temperatures to 1500°F
Contact Triad Bellows sales for single-ply expansion joints

WAUKESHA WITH FLOATING ANSI EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Waukesha lip flange T-321 stainless
- 3- Floating 150# drilled ANSI outlet flange A-36 c/s
- 4- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (WAUKESHA)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
5"	5"	5"	9"	2.00"	104	.625"	138	50-5065220	12"	3.00"	64	1.00"	39	50-5095220	15"	3.25"	40	1.50"	13	50-50125220
6"	6"	6"	9"	2.00"	119	.625"	220	50-6066220	12"	3.00"	75	1.00"	62	50-6096220	15"	4.50"	46	1.50"	21	50-60126220
8"	8"	8"	9"	2.00"	153	.500"	476	50-8068220	12"	3.00"	97	1.00"	139	50-8098220	15"	5.50"	59	1.50"	46	50-80128220
10"	10"	10"	9"	2.00"	145	.500"	691	50-100610220	12"	3.00"	96	1.00"	205	50-100910220	15"	5.50"	72	1.50"	86	50-1001210220
12"	12"	12"	9"	2.00"	171	.430"	1151	50-120612220	12"	3.00"	113	.875"	338	50-120912220	15"	5.50"	85	1.50"	144	50-1201212220
14"	14"	14"	9"	2.00"	198	.375"	1788	50-140614220	12"	3.00"	132	.750"	530	50-140914220	15"	5.50"	99	1.50"	223	50-1401214220

Custom lengths available

* Movements are non-concurrent
 Stainless flanges available on request for 1200°F temperature rating
 Flow liners may be required. See EJMA 10 guidelines
 Hastelloy X and Inconel 625 available for temperatures to 1500°F
 Contact Triad Bellows sales for single-ply expansion joints



WELD END EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Beveled weld ends carbon steel
- 3- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX

**Note: 3" through 18" are A53 standard wall pipe
20" and larger are 1/4" thick A-36 rolled cylinders**



SIZE			6" L/L MULTI-PLY BELLWS						9" L/L MULTI-PLY BELLWS						12" L/L MULTI-PLY BELLWS					
SIZE	INLET (37° BEVEL)	OUTLET (37° BEVEL)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	12"	1.50"	123	0.625	81	50-30640	15"	2.00"	83	1.0"	24	50-3040	18"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	12"	1.75"	107	0.625	94	50-35640	15"	2.75"	68	1.0"	27	50-3540	18"	X	X	X	X	N/A
4"	4"	4"	12"	2.00"	120	.625"	129	50-40640	15"	3.00"	46	1.00"	22	50-4040	18"	2.50"	55	1.50"	15	50-401240
5"	5"	5"	12"	2.00"	105	.625"	170	50-50640	15"	3.00"	66	1.00"	47	50-5040	18"	4.00"	43	1.50"	18	50-501240
6"	6"	6"	12"	2.00"	131	.625"	288	50-60640	15"	3.00"	82	1.00"	80	50-6040	18"	5.00"	49	1.50"	28	50-601240
8"	8"	8"	12"	2.00"	165	.500"	591	50-80640	15"	3.00"	103	1.00"	165	50-8040	18"	5.50"	64	1.50"	58	50-801240
10"	10"	10"	12"	2.00"	154	.430"	845	50-100640	15"	3.00"	103	1.00"	248	50-10040	18"	5.50"	80	1.50"	110	50-1001240
12"	12"	12"	12"	2.00"	181	.375"	1368	50-120640	15"	3.00"	121	.875"	405	50-12040	18"	5.50"	91	1.50"	171	50-1201240
14"	14"	14"	12"	2.00"	198	.375"	1788	50-140640	15"	3.00"	132	.750"	530	50-14040	18"	5.50"	99	1.50"	223	50-1401240
16"	16"	16"	12"	2.00"	225	.250"	2623	50-160640	15"	3.00"	150	.625"	777	50-16040	18"	5.50"	113	1.25"	328	50-1601240
18"	18"	18"	12"	2.00"	253	.250"	3684	50-180640	15"	3.00"	168	.500"	1092	50-18040	18"	5.50"	126	1.13"	461	50-1801240
20"	20"	20"	12"	2.00"	280	.250"	4997	50-200640	15"	3.00"	186	.500"	1480	50-20040	18"	5.25"	171	1.00"	783	50-2001240
22"	22"	22"	12"	2.00"	307	.188"	6587	50-220640	15"	3.00"	204	.500"	1952	50-22040	18"	5.25"	187	.875"	1030	50-2201240
24"	24"	24"	12"	2.00"	333	.188"	8482	50-240640	15"	3.00"	222	.500"	2513	50-24040	18"	5.25"	204	.750"	1324	50-2401240
26"	26"	26"	12"	2.00"	460	.188"	13907	50-260640	15"	3.00"	298	.438"	4017	50-26040	18"	5.25"	220	.750"	1669	50-2601240
28"	28"	28"	12"	2.00"	494	.188"	17238	50-280640	15"	3.00"	320	.375"	4980	50-28040	18"	5.25"	236	.750"	2070	50-2801240
30"	30"	30"	12"	2.00"	528	.125"	21059	50-300640	15"	3.00"	342	.375"	6085	50-30040	18"	5.25"	253	.625"	2529	50-3001240
32"	32"	32"	12"	2.00"	562	.125"	25403	50-320640	15"	3.00"	364	.313"	7342	50-32040	18"	5.25"	269	.625"	3051	50-3201240
34"	34"	34"	12"	2.00"	596	.063"	30304	50-340640	15"	3.00"	386	.313"	8758	50-34040	18"	5.25"	285	.500"	3639	50-3401240
36"	36"	36"	12"	2.00"	433	.063"	24913	50-360640	15"	3.00"	289	.250"	7382	50-36040	18"	5.25"	217	.500"	3114	50-3601240
38"	38"	38"	12"	2.00"	457	.063"	29152	50-380640	15"	3.00"	304	.250"	8638	50-38040	18"	5.25"	228	.500"	3644	50-3801240
40"	40"	40"	12"	2.00"	480	.063"	33844	50-400640	15"	3.00"	320	.250"	10028	50-40040	18"	5.25"	240	.500"	4231	50-4001240
42"	42"	42"	12"	2.00"	503	.063"	39013	50-420640	15"	3.00"	335	.250"	11559	50-42040	18"	5.25"	252	.500"	4877	50-4201240
44"	44"	44"	12"	2.00"	526	.063"	44681	50-440640	15"	3.00"	351	.250"	13239	50-44040	18"	5.25"	263	.500"	5585	50-4401240
46"	46"	46"	12"	2.00"	549	.063"	50863	40-460640	15"	3.00"	366	.250"	15071	40-46040	18"	5.25"	275	.375"	6358	40-4601240
48"	48"	48"	12"	2.00"	572	.063"	57583	50-480640	15"	3.00"	382	.250"	17062	50-48040	18"	5.25"	286	.375"	7198	50-4801240

Custom lengths available

* Movements are non-concurrent

Stainless weld ends available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

Concentric reducers can be added for smooth transitions

SOCKET WELD EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1200°F

- 1- Multi-ply T-321 stainless exhaust bellows
 - 2- 14 gauge T-321 s/s cuff to fit over pipe or tube
 - 3- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
 - * Welding per ASME Section IX

Note: Metric sizes are available on request



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET INSIDE DIAMETER	OUTLET INSIDE DIAMETER	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3.00"	3.06"	3.06"	9"	1.25"	107	.625"	53	50-306230-321	12"	1.625"	72	1.00"	16	50-30230-321	15"	X	X	X	X	N/A
3.50"	3.56"	3.56"	9"	1.50"	123	.625"	81	50-356230-321	12"	2.00"	83	1.00"	24	50-35230-321	15"	X	X	X	X	N/A
4.00"	4.06"	4.06"	9"	1.75"	107	.625"	94	50-406230-321	12"	2.75"	68	1.00"	27	50-40230-321	15"	2.00"	50	1.5	11	50-4012230-321
4.50"	4.56"	4.56"	9"	2.00"	120	.625"	129	50-456230-321	12"	3.00"	46	1.00"	22	50-45230-321	15"	2.50"	55	1.50"	15	50-4512230-321
5.00"	5.06"	5.06"	9"	2.00"	104	.625"	138	50-506230-321	12"	3.00"	64	1.00"	39	50-50230-321	15"	3.25"	40	1.50"	13	50-5012230-321
5.56"	5.62"	5.62"	9"	2.00"	105	.625"	170	50-556230-321	12"	3.00"	66	1.00"	47	50-55230-321	15"	4.00"	43	1.50"	18	50-5512230-321
6.00"	6.06"	6.06"	9"	2.00"	119	.625"	220	50-606230-321	12"	3.00"	75	1.00"	62	50-60230-321	15"	4.50"	46	1.50"	21	50-6012230-321
6.63"	6.69"	6.69"	9"	2.00"	131	.625"	288	50-656230-321	12"	3.00"	82	1.00"	80	50-65230-321	15"	5.00"	49	1.50"	28	50-6512230-321
8.00"	8.06"	8.06"	9"	2.00"	153	.500"	476	50-806230-321	12"	3.00"	97	1.00"	136	50-80230-321	15"	5.50"	59	1.50"	46	50-8012230-321
8.63"	8.69"	8.69"	9"	2.00"	165	.500"	591	50-856230-321	12"	3.00"	103	1.00"	165	50-85230-321	15"	5.50"	64	1.50"	58	50-8512230-321
10.00"	10.06"	10.06"	9"	2.00"	145	.500"	691	50-1006230-321	12"	3.00"	96	1.00"	205	50-100230-321	15"	5.50"	72	1.50"	86	50-10012230-321
10.75"	10.81"	10.81"	9"	2.00"	154	.430"	845	50-1056230-321	12"	3.00"	103	1.00"	248	50-105230-321	15"	5.50"	80	1.50"	110	50-10512230-321
12.00"	12.06"	12.06"	9"	2.00"	171	.430"	1151	50-1206230-321	12"	3.00"	113	.875"	338	50-120230-321	15"	5.50"	85	1.50"	144	50-12012230-321
12.75"	12.81"	12.81"	9"	2.00"	181	.375"	1368	50-1256230-321	12"	3.00"	121	.875"	405	50-125230-321	15"	5.50"	91	1.50"	171	50-12512230-321
14.00"	14.06"	14.06"	9"	2.00"	198	.375"	1788	50-1406230-321	12"	3.00"	132	.750"	530	50-140230-321	15"	5.50"	99	1.50"	223	50-14012230-321
16.00"	16.06"	16.06"	9"	2.00"	225	.250"	2623	50-1606230-321	12"	3.00"	150	.625"	777	50-160230-321	15"	5.50"	113	1.25"	328	50-16012230-321
18.00"	18.06	18.06	9"	2.00"	253	.250"	3684	50-1806230-321	12"	3.00"	168	.500"	1092	50-180230-321	15"	5.50"	126	1.13"	461	50-18012230-321
20.00"	20.06	20.06	9"	2.00"	280	.250"	4997	50-2006230-321	12"	3.00"	186	.500"	1480	50-200230-321	15"	5.25"	171	1.00"	783	50-20012230-321
22.00"	22.06	22.06	9"	2.00"	307	.188"	6587	50-2206230-321	12"	3.00"	204	.500"	1952	50-220230-321	15"	5.25"	187	.875"	1030	50-22012230-321
24.00"	24.06	24.06	9"	2.00"	333	.188"	8482	50-2406230-321	12"	3.00"	222	.500"	2513	50-240230-321	15"	5.25"	204	.750"	1324	50-24012230-321
26.00"	26.06	26.06	9"	2.00"	460	.188"	13907	50-2606230-321	12"	3.00"	298	.438"	4017	50-260230-321	15"	5.25"	220	.750"	1669	50-26012230-321
28.00"	28.06	28.06	9"	2.00"	494	.188"	17238	50-2806230-321	12"	3.00"	320	.375"	4980	50-280230-321	15"	5.25"	236	.750"	2070	50-28012230-321
30.00"	30.06	30.06	9"	2.00"	528	.125"	21059	50-3006230-321	12"	3.00"	342	.375"	6085	50-300230-321	15"	5.25"	253	.625"	2529	50-30012230-321
32.00"	32.06	32.06	9"	2.00"	562	.125"	25403	50-3206230-321	12"	3.00"	364	.313"	7342	50-320230-321	15"	5.25"	269	.625"	3051	50-32012230-321
34.00"	34.06	34.06	9"	2.00"	596	.063"	30304	50-3406230-321	12"	3.00"	386	.313"	8758	50-340230-321	15"	5.25"	285	.500"	3639	50-34012230-321
36.00"	36.06	36.06	9"	2.00"	433	.063"	24913	50-3606230-321	12"	3.00"	289	.250"	7382	50-360230-321	15"	5.25"	217	.500"	3114	50-36012230-321

Custom lengths available
* Movements are non-concurrent
Flow liners may be required. See EJMA 10 guidelines
Hastelloy X and Inconel 625 available for temperatures to 1500°F
Contact Triad Bellows sales for single-ply expansion joints

S/S SLOTTED CUFF EXHAUST EXPANSION JOINTS

RATED: 5 PSIG @ 1200°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- 16 gauge T-304 s/s cuff to fit over pipe or tube
- 3- T-304 / T-321 s/s flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX

Note: Metric sizes are available on request



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET INSIDE DIAMETER	OUTLET INSIDE DIAMETER	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3.00"	3.06"	3.06"	14"	1.25"	107	.625"	53	50-306240-304	17"	1.625"	72	1.00"	16	50-30240-304	20"	X	X	X	X	N/A
3.50"	3.56"	3.56"	14"	1.50"	123	.625"	81	50-356240-304	17"	2.00"	83	1.00"	24	50-35240-304	20"	X	X	X	X	N/A
4.00"	4.06"	4.06"	14"	1.75"	107	.625"	94	50-406240-304	17"	2.75"	68	1.00"	27	50-40240-304	20"	2.00"	50	1.5	11	50-4012240-304
4.50"	4.56"	4.56"	14"	2.00"	120	.625"	129	50-456240-304	17"	3.00"	46	1.00"	22	50-45240-304	20"	2.50"	55	1.50"	15	50-4512240-304
5.00"	5.06"	5.06"	14"	2.00"	104	.625"	138	50-506240-304	17"	3.00"	64	1.00"	39	50-50240-304	20"	3.25"	40	1.50"	13	50-5012240-304
5.56"	5.62"	5.62"	14"	2.00"	105	.625"	170	50-556240-304	17"	3.00"	66	1.00"	47	50-55240-304	20"	4.00"	43	1.50"	18	50-5512240-304
6.00"	6.06"	6.06"	14"	2.00"	119	.625"	220	50-606240-304	17"	3.00"	75	1.00"	62	50-60240-304	20"	4.50"	46	1.50"	21	50-6012240-304
6.63"	6.69"	6.69"	14"	2.00"	131	.625"	288	50-656240-304	17"	3.00"	82	1.00"	80	50-65240-304	20"	5.00"	49	1.50"	28	50-6512240-304
8.00"	8.06"	8.06"	14"	2.00"	153	.500"	476	50-806240-304	17"	3.00"	97	1.00"	136	50-80240-304	20"	5.50"	59	1.50"	46	50-8012240-304

OPTIONAL 16 GA. CARBON STEEL SLOTTED CUFFS

RATED: 5 PSIG @ 1000°F

3.00"	3.06"	3.06"	14"	1.25"	107	.625"	53	50-306240	17"	1.625"	72	1.00"	16	50-30240	20"	X	X	X	X	N/A
3.50"	3.56"	3.56"	14"	1.50"	123	.625"	81	50-356240	17"	2.00"	83	1.00"	24	50-35240	20"	X	X	X	X	N/A
4.00"	4.06"	4.06"	14"	1.75"	107	.625"	94	50-406240	17"	2.75"	68	1.00"	27	50-40240	20"	2.00"	50	1.5	11	50-4012240
4.50"	4.56"	4.56"	14"	2.00"	120	.625"	129	50-456240	17"	3.00"	46	1.00"	22	50-45240	20"	2.50"	55	1.50"	15	50-4512240
5.00"	5.06"	5.06"	14"	2.00"	104	.625"	138	50-506240	17"	3.00"	64	1.00"	39	50-50240	20"	3.25"	40	1.50"	13	50-5012240
5.56"	5.62"	5.62"	14"	2.00"	105	.625"	170	50-556240	17"	3.00"	66	1.00"	47	50-55240	20"	4.00"	43	1.50"	18	50-5512240
6.00"	6.06"	6.06"	14"	2.00"	119	.625"	220	50-606240	17"	3.00"	75	1.00"	62	50-60240	20"	4.50"	46	1.50"	21	50-6012240
6.63"	6.69"	6.69"	14"	2.00"	131	.625"	288	50-656240	17"	3.00"	82	1.00"	80	50-65240	20"	5.00"	49	1.50"	28	50-6512240
8.00"	8.06"	8.06"	14"	2.00"	153	.500"	476	50-806240	17"	3.00"	97	1.00"	136	50-80240	20"	5.50"	59	1.50"	46	50-8012240

Custom lengths available

* Movements are non-concurrent

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

HIGH TEMP FIXED FLANGE ALLOY X EXPANSION JOINTS

RATED: 2 PSIG @ 1500°F

- 1- Multi-ply Alloy X exhaust bellows
- 2- T-316 s/s fixed 150# drilled ANSI inlet flange
- 3- T-316 s/s fixed 150# drilled ANSI outlet flange
- 4- Alloy X flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	7"	1.25"	123	.625"	78	50-306060	10"	2.00"	84	1.00"	24	50-309060	13"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	7"	1.25"	107	.625"	94	50-356060	10"	2.75"	42	1.00"	16	50-359060	13"	X	X	X	X	N/A
4"	4"	4"	7"	1.75"	120	.625"	130	50-406060	10"	3.00"	46	1.00"	22	50-409060	13"	2.63"	60	1.75"	16	50-4012060
5"	5"	5"	7"	2.00"	105	.625"	170	50-506060	10"	3.00"	65	1.00"	48	50-509060	13"	3.75"	60	1.75"	24	50-5012060
6"	6"	6"	7"	2.00"	131	.625"	288	50-606060	10"	3.00"	82	1.00"	82	50-609060	13"	4.75"	68	1.75"	37	50-6012060
8"	8"	8"	7"	2.00"	165	.500"	591	50-806060	10"	3.00"	104	1.00"	168	50-809060	13"	5.50"	63	1.75"	58	50-8012060
10"	10"	10"	7"	2.00"	154	.430"	845	50-1006060	10"	3.00"	102	1.00"	249	50-1009060	13"	5.50"	77	1.75"	106	50-10012060
12"	12"	12"	7"	2.00"	181	.375"	1,368	50-1206060	10"	3.00"	121	.750"	405	50-1209060	13"	5.50"	91	1.63"	171	50-12012060
14"	14"	14"	7"	2.00"	198	.375"	1,788	50-1406060	10"	3.00"	172	.750"	719	50-1409060	13"	5.50"	99	1.50"	223	50-14012060
16"	16"	16"	7"	2.00"	255	.250"	2,623	50-1606060	10"	3.00"	194	.625"	1,039	50-1609060	13"	5.50"	113	1.25"	323	50-16012060
18"	18"	18"	7"	2.00"	253	.250"	3,684	50-1806060	10"	3.00"	216	.625"	1,442	50-1809060	13"	5.50"	126	1.13"	461	50-18012060
20"	20"	20"	7"	2.00"	280	.250"	4,997	50-2006060	10"	3.00"	237	.500"	1,938	50-2009060	13"	5.25"	171	1.00"	785	50-20012060
22"	22"	22"	7"	2.00"	307	.188"	6,587	50-2206060	10"	3.00"	260	.500"	2,547	50-2209060	13"	5.25"	187	.875"	1,033	50-22012060
24"	24"	24"	7"	2.00"	333	.188"	8,482	50-2406060	10"	3.00"	283	.438"	3,270	50-2409060	13"	5.25"	204	.750"	1,329	50-24012060
26"	26"	26"	7"	2.00"	459	.188"	13,772	50-2606060	10"	3.00"	305	.438"	4,118	50-2609060	13"	5.25"	220	.750"	1,675	50-26012060
28"	28"	28"	7"	2.00"	493	.188"	17,069	50-2806060	10"	3.00"	327	.375"	5,100	50-2809060	13"	5.25"	236	.625"	2,077	50-28012060
30"	30"	30"	7"	2.00"	527	.125"	20,852	50-3006060	10"	3.00"	449	.375"	8,072	50-3009060	13"	5.25"	253	.625"	2,538	50-30012060
32"	32"	32"	7"	2.00"	561	.125"	25,153	50-3206060	10"	3.00"	478	.313"	9,732	50-3209060	13"	5.25"	269	.625"	3,062	50-32012060
34"	34"	34"	7"	2.00"	598	.063"	30,006	50-3406060	10"	3.00"	507	.313"	11,605	50-3409060	13"	5.25"	285	.500"	3,652	50-34012060
36"	36"	36"	7"	2.00"	804	.063"	24,913	50-3606060	10"	3.00"	536	.313"	13,703	50-3609060	13"	5.25"	302	.500"	4,314	50-36012060
38"	38"	38"	7"	2.00"	900	.063"	57,448	50-3806060	10"	3.00"	564	.250"	16,033	50-3809060	13"	5.25"	318	.500"	5,050	50-38012060
40"	40"	40"	7"	2.00"	890	.063"	62,820	50-4006060	10"	3.00"	593	.250"	18,613	50-4009060	13"	5.25"	334	.500"	5,866	50-40012060
42"	42"	42"	7"	2.00"	933	.063"	72,410	50-4206060	10"	3.00"	622	.250"	21,455	50-4209060	13"	5.25"	350	.500"	6,764	50-42012060
44"	44"	44"	7"	2.00"	976	.063"	82,927	50-4406060	10"	3.00"	650	.250"	24,571	50-4409060	13"	5.25"	366	.375"	7,750	50-44012060
46"	46"	46"	7"	2.00"	1,019	.063"	94,411	50-4606060	10"	3.00"	679	.250"	27,974	50-4609060	13"	5.25"	382	.375"	8,827	50-46012060
48"	48"	48"	7"	2.00"	1,061	.063"	106,905	50-4806060	10"	3.00"	708	.188"	31,675	50-4809060	13"	5.25"	398	.375"	9,998	50-48012060

Most expansion joint configurations can be made with high temp Alloy X
 Custom lengths available
 * Movements are non-concurrent
 Flow liners may be required. See EJMA 10 guidelines
 Contact Triad Bellows sales for single-ply expansion joints

HIGH TEMP FLOATING FLANGE ALLOY X EXPANSION JOINTS

RATED: 2 PSIG @ 1500°F

- 1- Multi-ply Alloy X exhaust bellows
- 2- T-316 s/s fixed 150# drilled ANSI inlet flange
- 3- T-316 s/s fixed 150# drilled ANSI outlet flange
- 4- Alloy X vanstone stub ends
- 5- Alloy X flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			6" L/L MULTI-PLY BELLOWS						9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	10"	1.25"	123	.625"	78	50-306070	13"	2.00"	84	1.00"	24	50-309070	16"	X	X	X	X	N/A
3-1/2"	3.5"	3.5"	10"	1.25"	107	.625"	94	50-356070	13"	2.75"	42	1.00"	16	50-359070	16"	X	X	X	X	N/A
4"	4"	4"	10"	1.75"	120	.625"	130	50-406070	13"	3.00"	46	1.00"	22	50-409070	16"	2.63"	60	1.75"	16	50-4012070
5"	5"	5"	10"	2.00"	105	.625"	170	50-506070	13"	3.00"	65	1.00"	48	50-509070	16"	3.75"	60	1.75"	24	50-5012070
6"	6"	6"	10"	2.00"	131	.625"	288	50-606070	13"	3.00"	82	1.00"	82	50-609070	16"	4.75"	68	1.75"	37	50-6012070
8"	8"	8"	10"	2.00"	165	.500"	591	50-806070	13"	3.00"	104	1.00"	168	50-809070	16"	5.50"	63	1.75"	58	50-8012070
10"	10"	10"	10"	2.00"	154	.430"	845	50-1006070	13"	3.00"	102	1.00"	249	50-1009070	16"	5.50"	77	1.75"	106	50-10012070
12"	12"	12"	10"	2.00"	181	.375"	1,368	50-1206070	13"	3.00"	121	.750"	405	50-1209070	16"	5.50"	91	1.63"	171	50-12012070
14"	14"	14"	10"	2.00"	198	.375"	1,788	50-1406070	13"	3.00"	172	.750"	719	50-1409070	16"	5.50"	99	1.50"	223	50-14012070
16"	16"	16"	10"	2.00"	255	.250"	2,623	50-1606070	13"	3.00"	194	.625"	1,039	50-1609070	16"	5.50"	113	1.25"	323	50-16012070
18"	18"	18"	10"	2.00"	253	.250"	3,684	50-1806070	13"	3.00"	216	.625"	1,442	50-1809070	16"	5.50"	126	1.13"	461	50-18012070
20"	20"	20"	10"	2.00"	280	.250"	4,997	50-2006070	13"	3.00"	237	.500"	1,938	50-2009070	16"	5.25"	171	1.00"	785	50-20012070
22"	22"	22"	10"	2.00"	307	.188"	6,587	50-2206070	13"	3.00"	260	.500"	2,547	50-2209070	16"	5.25"	187	.875"	1,033	50-22012070
24"	24"	24"	10"	2.00"	333	.188"	8,482	50-2406070	13"	3.00"	283	.438"	3,270	50-2409070	16"	5.25"	204	.750"	1,329	50-24012070
26"	26"	26"	10"	2.00"	459	.188"	13,772	50-2606070	13"	3.00"	305	.438"	4,118	50-2609070	16"	5.25"	220	.750"	1,675	50-26012070
28"	28"	28"	10"	2.00"	493	.188"	17,069	50-2806070	13"	3.00"	327	.375"	5,100	50-2809070	16"	5.25"	236	.625"	2,077	50-28012070
30"	30"	30"	10"	2.00"	527	.125"	20,852	50-3006070	13"	3.00"	449	.375"	8,072	50-3009070	16"	5.25"	253	.625"	2,538	50-30012070
32"	32"	32"	10"	2.00"	561	.125"	25,153	50-3206070	13"	3.00"	478	.313"	9,732	50-3209070	16"	5.25"	269	.625"	3,062	50-32012070
34"	34"	34"	10"	2.00"	598	.063"	30,006	50-3406070	13"	3.00"	507	.313"	11,605	50-3409070	16"	5.25"	285	.500"	3,652	50-34012070
36"	36"	36"	10"	2.00"	804	.063"	24,913	50-3606070	13"	3.00"	536	.313"	13,703	50-3609070	16"	5.25"	302	.500"	4,314	50-36012070
38"	38"	38"	10"	2.00"	900	.063"	57,448	50-3806070	13"	3.00"	564	.250"	16,033	50-3809070	16"	5.25"	318	.500"	5,050	50-38012070
40"	40"	40"	10"	2.00"	890	.063"	62,820	50-4006070	13"	3.00"	593	.250"	18,613	50-4009070	16"	5.25"	334	.500"	5,866	50-40012070
42"	42"	42"	10"	2.00"	933	.063"	72,410	50-4206070	13"	3.00"	622	.250"	21,455	50-4209070	16"	5.25"	350	.500"	6,764	50-42012070
44"	44"	44"	10"	2.00"	976	.063"	82,927	50-4406070	13"	3.00"	650	.250"	24,571	50-4409070	16"	5.25"	366	.375"	7,750	50-44012070
46"	46"	46"	10"	2.00"	1,019	.063"	94,411	50-4606070	13"	3.00"	679	.250"	27,974	50-4609070	16"	5.25"	382	.375"	8,827	50-46012070
48"	48"	48"	10"	2.00"	1,061	.063"	106,905	50-4806070	13"	3.00"	708	.188"	31,675	50-4809070	16"	5.25"	398	.375"	9,998	50-48012070

Most expansion joint configurations can be made with high temp Alloy X
Custom lengths available

* Movements are non-concurrent

Flow liners may be required. See EJMA 10 guidelines
Contact Triad Bellows sales for single-ply expansion joints

EXTREME MOVEMENT FIXED FLANGE EXPANSION JOINTS

T-321 S/S RATED: 5 PSIG @ 1000°F
INCONEL 625 RATED 5 PSIG @ 1300°F
ALLOY X RATED 5 PSIG @ 1500°F



- 1- Single-ply exhaust bellows
- 2- Fixed 150# drilled ANSI inlet flange
- 3- Fixed 150# drilled ANSI outlet flange
- 4- Flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX

SIZE			T-321 STAINLESS BELLOWS						INCONEL 625 BELLOWS						ALLOY X BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
6"	6"	6"	14.00"	4.25"	106	2.00"	51	50-60100	15.00"	4.25"	105	2.13"	43	50-60100-625	15.00"	4.50"	92	2.13"	38	50-60100-X
8"	8"	8"	14.50"	4.25"	129	1.88"	93	50-80100	16.00"	4.50"	116	2.25"	71	50-80100-625	16.00"	4.75"	111	2.25"	64	50-80100-X
10"	10"	10"	16.00"	5.50"	146	1.88"	133	50-100100	16.00"	5.50"	191	2.00"	175	50-100100-625	16.00"	5.50"	136	2.00"	125	50-100100-X
12"	12"	12"	16.00"	5.00"	172	1.75"	216	50-120100	16.00"	5.50"	181	1.88"	227	50-120100-625	16.00"	5.50"	161	1.88"	202	50-120100-X
14"	14"	14"	16.00"	6.00"	133	1.75"	204	50-140100	16.00"	6.00"	139	1.75"	213	50-140100-625	16.00"	6.00"	236	1.75"	362	50-140100-X
16"	16"	16"	16.00"	6.00"	152	1.63"	297	50-160100	16.00"	6.00"	156	1.75"	307	50-160100-625	16.00"	6.00"	266	1.75"	521	50-160100-X
18"	18"	18"	16.00"	6.00"	170	1.50"	416	50-180100	16.00"	6.00"	173	1.50"	424	50-180100-625	16.00"	6.00"	295	1.50"	729	50-180100-X
20"	20"	20"	16.00"	6.00"	189	1.38"	562	50-200100	16.00"	6.00"	190	1.50"	567	50-200100-625	16.00"	6.00"	323	1.38"	966	50-200100-X
22"	22"	22"	16.00"	6.00"	207	1.25"	739	50-220100	16.00"	6.00"	203	1.38"	728	50-220100-625	16.00"	6.00"	347	1.25"	1270	50-220100-X
24"	24"	24"	16.00"	6.75"	130	1.25"	564	50-240100	16.00"	7.25"	133	1.25"	578	50-240100-625	16.00"	6.88"	353	1.25"	1536	50-240100-X
26"	26"	26"	16.00"	6.75"	140	1.13"	708	50-260100	16.00"	7.25"	144	1.00"	727	50-260100-625	16.00"	6.75"	382	1.13"	1931	50-260100-X
28"	28"	28"	16.00"	6.75"	151	1.13"	876	50-280100	16.00"	7.25"	154	1.00"	898	50-280100-625	16.00"	6.75"	411	1.06"	2389	50-280100-X
30"	30"	30"	16.00"	6.75"	161	1.06"	1067	50-300100	16.00"	7.25"	165	1.00"	1095	50-300100-625	16.00"	6.75"	439	1.00"	2914	50-300100-X
32"	32"	32"	16.00"	6.75"	171	1.00"	1285	50-320100	16.00"	7.25"	176	.88"	1318	50-320100-625	16.00"	6.75"	468	.93"	3509	50-320100-X
34"	34"	34"	16.00"	6.75"	182	.88"	1530	50-340100	16.00"	7.25"	186	.75"	1569	50-340100-625	16.00"	6.75"	492	.88"	4181	50-340100-X
36"	36"	36"	16.00"	6.75"	192	.88"	1804	50-360100	16.00"	7.25"	193	.75"	1818	50-360100-625	16.00"	6.75"	516	.88"	4846	50-360100-X
38"	38"	38"	16.00"	6.75"	203	.75"	2109	50-380100	16.00"	7.25"	204	.75"	2126	50-380100-625	16.00"	6.75"	543	.75"	5667	50-380100-X
40"	40"	40"	16.00"	6.75"	216	.75"	2447	50-400100	16.00"	7.25"	214	.63"	2466	50-400100-625	16.00"	6.75"	571	.75"	6573	50-400100-X
42"	42"	42"	16.00"	6.75"	223	.75"	2818	50-420100	16.00"	7.25"	225	.63"	2840	50-420100-625	16.00"	6.75"	599	.75"	7572	50-420100-X
44"	44"	44"	16.00"	6.75"	233	.63"	3226	50-440100	16.00"	7.25"	233	.63"	3222	50-440100-625	16.00"	6.75"	621	.63"	8592	50-440100-X
46"	46"	46"	16.00"	6.75"	244	.63"	3670	50-460100	16.00"	7.25"	243	.63"	3667	50-460100-625	16.00"	6.75"	649	.63"	9776	50-460100-X
48"	48"	48"	16.00"	6.75"	254	.63"	4153	50-480100	16.00"	7.25"	253	.50"	4149	50-480100-625	16.00"	6.75"	676	.63"	11065	50-480100-X

Custom lengths available

* Movements are non-concurrent

Flow liners may be required. See EJMA 10 guidelines

Contact Triad Bellows sales for single-ply expansion joints

EXTREME MOVEMENT FLOATING FLANGE EXPANSION JOINTS

T-321 S/S RATED: 5 PSIG @ 1000°F
INCONEL 625 RATED 5 PSIG @ 1300°F
ALLOY X RATED 5 PSIG @ 1500°F

- 1- Single-ply exhaust bellows
- 2- Floating 150# drilled ANSI inlet flange
- 3- Floating 150# drilled ANSI outlet flange
- 4- Vanstone stub end
- 5- Flow liner (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			T-321 STAINLESS BELLOWS						INCONEL 625 BELLOWS						ALLOY X BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
6"	6"	6"	16.00"	4.25"	106	2.00"	51	50-6090	17.00"	4.25"	105	2.13"	43	50-6090-625	17.00"	4.50"	92	2.13"	38	50-6090-X
8"	8"	8"	16.50"	4.25"	129	1.88"	93	50-8090	18.00"	4.50"	116	2.25"	71	50-8090-625	18.00"	4.75"	111	2.25"	64	50-8090-X
10"	10"	10"	18.00"	5.50"	146	1.88"	133	50-10090	18.00"	5.50"	191	2.00"	175	50-10090-625	18.00"	5.50"	136	2.00"	125	50-10090-X
12"	12"	12"	18.00"	5.00"	172	1.75"	216	50-12090	18.00"	5.50"	181	1.88"	227	50-12090-625	18.00"	5.50"	161	1.88"	202	50-12090-X
14"	14"	14"	18.00"	6.00"	133	1.75"	204	50-14090	18.00"	6.00"	139	1.75"	213	50-14090-625	18.00"	6.00"	236	1.75"	362	50-14090-X
16"	16"	16"	18.00"	6.00"	152	1.63"	297	50-160190	18.00"	6.00"	156	1.75"	307	50-160190-625	18.00"	6.00"	266	1.75"	521	50-160190-X
18"	18"	18"	18.00"	6.00"	170	1.50"	416	50-18090	18.00"	6.00"	173	1.50"	424	50-18090-625	18.00"	6.00"	295	1.50"	729	50-18090-X
20"	20"	20"	18.00"	6.00"	189	1.38"	562	50-20090	18.00"	6.00"	190	1.50"	567	50-20090-625	18.00"	6.00"	323	1.38"	966	50-20090-X
22"	22"	22"	18.00"	6.00"	207	1.25"	739	50-22090	18.00"	6.00"	203	1.38"	728	50-22090-625	18.00"	6.00"	347	1.25"	1270	50-22090-X
24"	24"	24"	18.00"	6.75"	130	1.25"	564	50-24090	18.00"	7.25"	133	1.25"	578	50-24090-625	18.00"	6.88"	353	1.25"	1536	50-24090-X
26"	26"	26"	18.00"	6.75"	140	1.13"	708	50-26090	18.00"	7.25"	144	1.00"	727	50-26090-625	18.00"	6.75"	382	1.13"	1931	50-26090-X
28"	28"	28"	18.00"	6.75"	151	1.13"	876	50-28090	18.00"	7.25"	154	1.00"	898	50-28090-625	18.00"	6.75"	411	1.06"	2389	50-28090-X
30"	30"	30"	18.00"	6.75"	161	1.06"	1067	50-30090	18.00"	7.25"	165	1.00"	1095	50-30090-625	18.00"	6.75"	439	1.00"	2914	50-30090-X
32"	32"	32"	18.00"	6.75"	171	1.00"	1285	50-32090	18.00"	7.25"	176	.88"	1318	50-32090-625	18.00"	6.75"	468	.93"	3509	50-32090-X
34"	34"	34"	18.00"	6.75"	182	.88"	1530	50-34090	18.00"	7.25"	186	.75"	1569	50-34090-625	18.00"	6.75"	492	.88"	4181	50-34090-X
36"	36"	36"	18.00"	6.75"	192	.88"	1804	50-36090	18.00"	7.25"	193	.75"	1818	50-36090-625	18.00"	6.75"	516	.88"	4846	50-36090-X
38"	38"	38"	18.00"	6.75"	203	.75"	2109	50-38090	18.00"	7.25"	204	.75"	2126	50-38090-625	18.00"	6.75"	543	.75"	5667	50-38090-X
40"	40"	40"	18.00"	6.75"	216	.75"	2447	50-40090	18.00"	7.25"	214	.63"	2466	50-40090-625	18.00"	6.75"	571	.75"	6573	50-40090-X
42"	42"	42"	18.00"	6.75"	223	.75"	2818	50-42090	18.00"	7.25"	225	.63"	2840	50-42090-625	18.00"	6.75"	599	.75"	7572	50-42090-X
44"	44"	44"	18.00"	6.75"	233	.63"	3226	50-44090	18.00"	7.25"	233	.63"	3222	50-44090-625	18.00"	6.75"	621	.63"	8592	50-44090-X
46"	46"	46"	18.00"	6.75"	244	.63"	3670	50-46090	18.00"	7.25"	243	.63"	3667	50-46090-625	18.00"	6.75"	649	.63"	9776	50-46090-X
48"	48"	48"	18.00"	6.75"	254	.63"	4153	50-48090	18.00"	7.25"	253	.50"	4149	50-48090-625	18.00"	6.75"	676	.63"	11065	50-48090-X

Custom lengths available
* Movements are non-concurrent
Flow liners may be required. See EJMA 10 guidelines
Contact Triad Bellows sales for single-ply expansion joints

ANSI FIXED FLANGE UNIVERSAL EXPANSION JOINTS

RATED: 3 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed 150# drilled ANSI inlet flange A-36 c/s
- 3- Fixed 150# drilled ANSI outlet flange A-36 c/s
- 4- Center spool T-304 stainless
- 5- T-304 / T-321 s/s flow liners (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE			24" F/F MULTI-PLY BELLOWS						48" F/F MULTI-PLY BELLOWS					
SIZE	INLET (ANSI)	OUTLET (ANSI)	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.	OVERALL LENGTH	AXIAL COMPRESSION*	AXIAL SPRING RATE	LATERAL OFFSET*	LATERAL SPRING RATE	PART No.
3"	3"	3"	24"	1.00"	45	12.00"	2	51-3010-24	48"	1.00"	45	32.00"	1	51-3010-48
3-1/2"	3.5"	3.5"	24"	1.50"	35	12.00"	2	51-3510-24	48"	1.50"	35	32.00"	1	51-3510-48
4"	4"	4"	24"	1.75"	40	12.00"	2	51-4010-24	48"	1.75"	40	32.00"	1	51-4010-48
5"	5"	5"	24"	2.50"	38	12.00"	3	51-5010-24	48"	2.50"	38	32.00"	1	51-5010-48
6"	6"	6"	24"	3.50"	34	10.00"	4	51-6010-24	48"	3.50"	34	30.00"	1	51-6010-48
8"	8"	8"	24"	6.00"	45	8.00"	9	51-8010-24	48"	6.00"	45	25.00"	1	51-8010-48
10"	10"	10"	24"	8.50"	34	6.00"	11	51-10010-24	48"	8.50"	34	20.00"	2	51-10010-48
12"	12"	12"	24"	8.50"	45	5.25"	19	51-12010-24	48"	8.50"	45	17.25"	3	51-12010-48
14"	14"	14"	24"	8.50"	36	5.00"	18	51-14010-24	48"	8.50"	36	16.00"	3	51-14010-48
16"	16"	16"	24"	8.50"	40	4.25"	27	51-16010-24	48"	8.50"	40	14.50"	4	51-16010-48
18"	18"	18"	24"	8.50"	45	3.75"	37	51-18010-24	48"	8.50"	45	12.50"	6	51-18010-48
20"	20"	20"	24"	8.50"	49	3.50"	50	51-20010-24	48"	8.50"	49	11.25"	7	51-20010-48
22"	22"	22"	24"	8.50"	54	3.00"	66	51-22010-24	48"	8.50"	54	10.25"	10	51-22010-48
24"	24"	24"	24"	8.50"	59	2.75"	85	51-24010-24	48"	8.50"	59	9.50"	13	51-24010-48
26"	26"	26"	24"	8.00"	102	2.75"	174	51-26010-24	48"	8.00"	102	9.00"	26	51-26010-48
28"	28"	28"	24"	8.00"	109	2.50"	215	51-28010-24	48"	8.00"	109	8.50"	32	51-28010-48
30"	30"	30"	24"	8.00"	117	2.50"	262	51-30010-24	48"	8.00"	117	8.00"	39	51-30010-48
32"	32"	32"	24"	8.00"	124	2.25"	316	51-32010-24	48"	8.00"	124	7.50"	47	51-32010-48
34"	34"	34"	24"	8.00"	132	2.00"	377	51-34010-24	48"	8.00"	132	7.00"	56	51-34010-48
36"	36"	36"	24"	8.00"	139	2.00"	445	51-36010-24	48"	8.00"	139	6.75"	66	51-36010-48
38"	38"	38"	24"	8.00"	147	1.75"	521	51-38010-24	48"	8.00"	147	6.50"	77	51-38010-48
40"	40"	40"	24"	8.00"	154	1.75"	604	51-40010-24	48"	8.00"	154	6.00"	90	51-40010-48
42"	42"	42"	24"	8.00"	162	1.75"	697	51-42010-24	48"	8.00"	162	5.75"	104	51-42010-48
44"	44"	44"	24"	8.00"	169	1.50"	798	51-44010-24	48"	8.00"	169	5.50"	119	51-44010-48
46"	46"	46"	24"	8.00"	177	1.50"	908	51-46010-24	48"	8.00"	177	5.25"	135	51-46010-48
48"	48"	48"	24"	8.00"	184	1.50"	1028	51-48010-24	48"	8.00"	184	5.00"	153	51-48010-48

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

DIN PN-6 METRIC EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed DIN PN-6 inlet flange A-36
- 3- Fixed DIN PN-6 inlet flange A-36
- 4- T-304 / T-321 s/s flow liners (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE							9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (DIN)	OUTLET (DIN)	FLANGE O.D. (MM)	BOLT CIRCLE (MM)	NUMBER BOLT HOLES	BOLT HOLE DIAMETER (MM)	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.
3"	80mm	80mm	190	150	4	18	12.50"	2.00"	83	1.00"	24	50-3090-PN6	15.50"	X	X	X	X	N/A
4"	100mm	100mm	210	170	4	18	12.50"	3.00"	46	1.00"	22	50-4090-PN6	15.50"	2.50"	55	1.50"	15	50-40120-PN6
5"	125mm	125mm	240	200	8	18	12.75"	3.00"	66	1.00"	47	50-5090-PN6	15.75"	4.00"	43	1.50"	18	50-50120-PN6
6"	150mm	150mm	265	225	8	18	12.75"	3.00"	82	1.00"	80	50-6090-PN6	15.75"	5.00"	49	1.50"	28	50-60120-PN6
8"	200mm	200mm	320	280	8	18	13.00"	3.00"	103	1.00"	165	50-8090-PN6	16.00"	5.50"	64	1.50"	58	50-80120-PN6
10"	250mm	250mm	375	335	12	18	13.00"	3.00"	103	1.00"	248	50-10090-PN6	16.00"	5.50"	80	1.50"	110	50-100120-PN6
12"	300mm	300mm	440	395	12	22	13.00"	3.00"	121	.875"	405	50-12090-PN6	16.00"	5.50"	91	1.50"	171	50-120120-PN6
14"	350mm	350mm	490	445	12	22	13.25"	3.00"	132	.750"	530	50-14090-PN6	16.25"	5.50"	99	1.50"	223	50-140120-PN6
16"	400mm	400mm	540	495	16	22	13.25"	3.00"	150	.625"	777	50-16090-PN6	16.25"	5.50"	113	1.25"	328	50-160120-PN6
18"	450mm	450mm	595	550	16	22	13.50"	3.00"	168	.500"	1092	50-18090-PN6	16.50"	5.50"	126	1.13"	461	50-180120-PN6
20"	500mm	500mm	645	600	20	22	13.50"	3.00"	186	.500"	1480	50-20090-PN6	16.50"	5.25"	171	1.00"	783	50-200120-PN6
24"	600mm	600mm	755	705	20	26	13.50"	3.00"	222	.500"	2513	50-24090-PN6	16.50"	5.25"	204	.750"	1324	50-240120-PN6
28"	700mm	700mm	860	810	24	26	13.50"	3.00"	320	.375"	4980	50-28090-PN6	16.50"	5.25"	236	.750"	2070	50-280120-PN6
32"	800mm	800mm	975	920	24	30	13.50"	3.00"	364	.313"	7342	50-32090-PN6	16.50"	5.25"	269	.625"	3051	50-320120-PN6
36"	900mm	900mm	1075	1020	24	30	13.50"	3.00"	289	.250"	7382	50-36090-PN6	16.50"	5.25"	217	.500"	3114	50-360120-PN6

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

DIN PN-10 METRIC EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed DIN PN-10 inlet flange A-36
- 3- Fixed DIN PN-10 outlet flange A-36
- 4- T-304 / T-321 s/s flow liners (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE							9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (DIN)	OUTLET (DIN)	FLANGE O.D. (MM)	BOLT CIRCLE (MM)	NUMBER BOLT HOLES	BOLT HOLE DIAMETER (MM)	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.
3"	80mm	80mm	200	160	4	18	12.75"	2.00"	83	1.00"	24	50-3090-PN10	15.75"	X	X	X	X	N/A
4"	100mm	100mm	220	180	8	18	12.75"	3.00"	46	1.00"	22	50-4090-PN10	15.75"	2.50"	55	1.50"	15	50-40120-PN10
5"	125mm	125mm	250	210	8	18	13.00"	3.00"	66	1.00"	47	50-5090-PN10	16.00"	4.00"	43	1.50"	18	50-50120-PN10
6"	150mm	150mm	285	240	8	22	13.00"	3.00"	82	1.00"	80	50-6090-PN10	16.00"	5.00"	49	1.50"	28	50-60120-PN10
8"	200mm	200mm	340	295	8	22	13.00"	3.00"	103	1.00"	165	50-8090-PN10	16.00"	5.50"	64	1.50"	58	50-80120-PN10
10"	250mm	250mm	395	350	12	22	13.25"	3.00"	103	1.00"	248	50-10090-PN10	16.25"	5.50"	80	1.50"	110	50-100120-PN10
12"	300mm	300mm	445	400	12	22	13.25"	3.00"	121	.875"	405	50-12090-PN10	16.25"	5.50"	91	1.50"	171	50-120120-PN10
14"	350mm	350mm	505	460	16	22	13.50"	3.00"	132	.750"	530	50-14090-PN10	16.50"	5.50"	99	1.50"	223	50-140120-PN10
16"	400mm	400mm	565	515	16	26	13.50"	3.00"	150	.625"	777	50-16090-PN10	16.50"	5.50"	113	1.25"	328	50-160120-PN10
18"	450mm	450mm	615	565	20	26	14.25"	3.00"	168	.500"	1092	50-18090-PN10	17.25"	5.50"	126	1.13"	461	50-180120-PN10
20"	500mm	500mm	670	620	20	26	14.25"	3.00"	186	.500"	1480	50-20090-PN10	17.25"	5.25"	171	1.00"	783	50-200120-PN10
24"	600mm	600mm	780	725	20	30	14.25"	3.00"	222	.500"	2513	50-24090-PN10	17.25"	5.25"	204	.750"	1324	50-240120-PN10
28"	700mm	700mm	895	840	24	30	14.25"	3.00"	320	.375"	4980	50-28090-PN10	17.25"	5.25"	236	.750"	2070	50-280120-PN10
32"	800mm	800mm	1015	950	24	33	14.25"	3.00"	364	.313"	7342	50-32090-PN10	17.25"	5.25"	269	.625"	3051	50-320120-PN10
36"	900mm	900mm	1115	1050	28	33	14.25"	3.00"	289	.250"	7382	50-36090-PN10	17.25"	5.25"	217	.500"	3114	50-360120-PN10

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

DIN JIS 5K METRIC EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed JIS 5K inlet flange A-36
- 3- Fixed JIS 5K outlet flange A-36
- 4- T-304 / T-321 s/s flow liners (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE						
SIZE	INLET (JIS)	OUTLET (JIS)	FLANGE O.D. (MM)	BOLT CIRCLE (MM)	NUMBER BOLT HOLES	BOLT HOLE DIAMETER (MM)
3"	80mm	80mm	180	145	4	19
3-1/2"	90mm	90mm	190	155	4	19
4"	100mm	100mm	200	165	8	19
5"	125mm	125mm	235	200	8	19
6"	150mm	150mm	265	230	8	19
8"	200mm	200mm	320	280	8	23
10"	250mm	250mm	385	345	12	23
12"	300mm	300mm	430	390	12	23
14"	350mm	350mm	480	435	12	25
16"	400mm	400mm	540	495	16	25
18"	450mm	450mm	605	555	16	25
20"	500mm	500mm	655	605	20	25
22"	550mm	550mm	720	665	20	27
24"	600mm	600mm	770	715	20	27
26"	650mm	650mm	825	770	24	27
28"	700mm	700mm	875	820	24	27
30"	750mm	750mm	945	880	24	33
32"	800mm	800mm	995	930	24	33
34"	850mm	850mm	1045	980	24	33
36"	900mm	900mm	1095	1030	24	33

9" L/L MULTI-PLY BELLOWS					
OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.
12.25"	2.00"	83	1.00"	24	50-3090-5K
12.25"	2.75"	68	1.0"	27	50-3590-5K
12.50"	3.00"	46	1.00"	22	50-4090-5K
12.50"	3.00"	66	1.00"	47	50-5090-5K
12.63"	3.00"	82	1.00"	80	50-6090-5K
12.88"	3.00"	103	1.00"	165	50-8090-5K
12.00"	3.00"	103	1.00"	248	50-10090-5K
12.00"	3.00"	121	.875"	405	50-12090-5K
12.00"	3.00"	132	.750"	530	50-14090-5K
12.00"	3.00"	150	.625"	777	50-16090-5K
12.00"	3.00"	168	.500"	1092	50-18090-5K
12.00"	3.00"	186	.500"	1480	50-20090-5K
12.25"	3.00"	204	.500"	1952	50-22090-5K
12.00"	3.00"	222	.500"	2513	50-24090-5K
12.00"	3.00"	298	.438"	4017	50-26090-5K
12.25"	3.00"	320	.375"	4980	50-28090-5K
12.38"	3.00"	342	.375"	6085	50-30090-5K
12.38"	3.00"	364	.313"	7342	50-32090-5K
12.50"	3.00"	386	.313"	8758	50-34090-5K
12.50"	3.00"	289	.250"	7382	50-36090-5K

12" L/L MULTI-PLY BELLOWS					
OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.
15.25"	X	X	X	X	N/A
15.25"	X	X	X	X	N/A
15.50"	2.50"	55	1.50"	15	50-40120-5K
15.50"	4.00"	43	1.50"	18	50-50120-5K
15.63"	5.00"	49	1.50"	28	50-60120-5K
15.88"	5.50"	64	1.50"	58	50-80120-5K
15.00"	5.50"	80	1.50"	110	50-100120-5K
15.00"	5.50"	91	1.50"	171	50-120120-5K
15.00"	5.50"	99	1.50"	223	50-140120-5K
15.00"	5.50"	113	1.25"	328	50-160120-5K
15.00"	5.50"	126	1.13"	461	50-180120-5K
15.00"	5.25"	171	1.00"	783	50-200120-5K
15.25"	5.25"	187	.875"	1030	50-220120-5K
15.00"	5.25"	204	.750"	1324	50-240120-5K
15.00"	5.25"	220	.750"	1669	50-260120-5K
15.25"	5.25"	236	.750"	2070	50-280120-5K
15.38"	5.25"	253	.625"	2529	50-300120-5K
15.38"	5.25"	269	.625"	3051	50-320120-5K
15.50"	5.25"	285	.500"	3639	50-340120-5K
15.50"	5.25"	217	.500"	3114	50-360120-5K

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

DIN JIS 10K METRIC EXPANSION JOINTS

RATED: 5 PSIG @ 1000°F

- 1- Multi-ply T-321 stainless exhaust bellows
- 2- Fixed JIS 10K inlet flange A-36
- 3- Fixed JIS 10K outlet flange A-36
- 4- T-304 / T-321 s/s flow liners (optional)
- * Design per EJMA 10th Edition
- * Welding per ASME Section IX



SIZE							9" L/L MULTI-PLY BELLOWS						12" L/L MULTI-PLY BELLOWS					
SIZE	INLET (JIS)	OUTLET (JIS)	FLANGE O.D. (MM)	BOLT CIRCLE (MM)	NUMBER BOLT HOLES	BOLT HOLE DIAMETER (MM)	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.	OVERALL LENGTH (INCH)	AXIAL COMPRESSION*	AXIAL SPRING RATE (LBS/INCH)	LATERAL OFFSET*	LATERAL SPRING RATE (LBS/INCH)	PART No.
3"	80mm	80mm	185	150	8	19	12.50"	2.00"	83	1.00"	24	50-3090-10K	15.50"	X	X	X	X	N/A
3-1/2"	90mm	90mm	195	160	8	19	12.50"	2.75"	68	1.0"	27	50-3590-10K	15.50"	X	X	X	X	N/A
4"	100mm	100mm	210	175	8	19	12.50"	3.00"	46	1.00"	22	50-4090-10K	15.50"	2.50"	55	1.50"	15	50-40120-10K
5"	125mm	125mm	250	210	8	23	12.75"	3.00"	66	1.00"	47	50-5090-10K	15.75"	4.00"	43	1.50"	18	50-50120-10K
6"	150mm	150mm	280	240	8	23	13.00"	3.00"	82	1.00"	80	50-6090-10K	16.00"	5.00"	49	1.50"	28	50-60120-10K
8"	200mm	200mm	330	290	12	23	13.00"	3.00"	103	1.00"	165	50-8090-10K	16.00"	5.50"	64	1.50"	58	50-80120-10K
10"	250mm	250mm	400	355	12	25	13.00"	3.00"	103	1.00"	248	50-10090-10K	16.00"	5.50"	80	1.50"	110	50-100120-10K
12"	300mm	300mm	445	400	16	25	13.00"	3.00"	121	.875"	405	50-12090-10K	16.00"	5.50"	91	1.50"	171	50-120120-10K
14"	350mm	350mm	490	445	16	25	13.25"	3.00"	132	.750"	530	50-14090-10K	16.25"	5.50"	99	1.50"	223	50-140120-10K
16"	400mm	400mm	560	510	16	27	13.50"	3.00"	150	.625"	777	50-16090-10K	16.50"	5.50"	113	1.25"	328	50-160120-10K
18"	450mm	450mm	620	565	20	27	13.50"	3.00"	168	.500"	1092	50-18090-10K	16.50"	5.50"	126	1.13"	461	50-180120-10K
20"	500mm	500mm	675	620	20	27	13.50"	3.00"	186	.500"	1480	50-20090-10K	16.50"	5.25"	171	1.00"	783	50-200120-10K
22"	550mm	550mm	745	745	20	33	13.75"	3.00"	204	.500"	1952	50-22090-10K	16.75"	5.25"	187	.875"	1030	50-220120-10K
24"	600mm	600mm	795	730	24	33	13.75"	3.00"	222	.500"	2513	50-24090-10K	16.75"	5.25"	204	.750"	1324	50-240120-10K
26"	650mm	650mm	845	780	24	33	14.00"	3.00"	298	.438"	4017	50-26090-10K	17.00"	5.25"	220	.750"	1669	50-260120-10K
28"	700mm	700mm	905	840	24	33	14.00"	3.00"	320	.375"	4980	50-28090-10K	17.00"	5.25"	236	.750"	2070	50-280120-10K
30"	750mm	750mm	970	900	24	33	14.00"	3.00"	342	.375"	6085	50-30090-10K	17.00"	5.25"	253	.625"	2529	50-300120-10K
32"	800mm	800mm	1020	950	28	33	14.00"	3.00"	364	.313"	7342	50-32090-10K	17.00"	5.25"	269	.625"	3051	50-320120-10K
34"	850mm	850mm	1070	1000	28	33	14.25"	3.00"	386	.313"	8758	50-34090-10K	17.25"	5.25"	285	.500"	3639	50-340120-10K
36"	900mm	900mm	1120	1050	28	33	14.25"	3.00"	289	.250"	7382	50-36090-10K	17.25"	5.25"	217	.500"	3114	50-360120-10K

Custom lengths available

* Movements are non-concurrent

Stainless flanges available on request for 1200°F temperature rating

Flow liners may be required. See EJMA 10 guidelines

Hastelloy X and Inconel 625 available for temperatures to 1500°F

Contact Triad Bellows sales for single-ply expansion joints

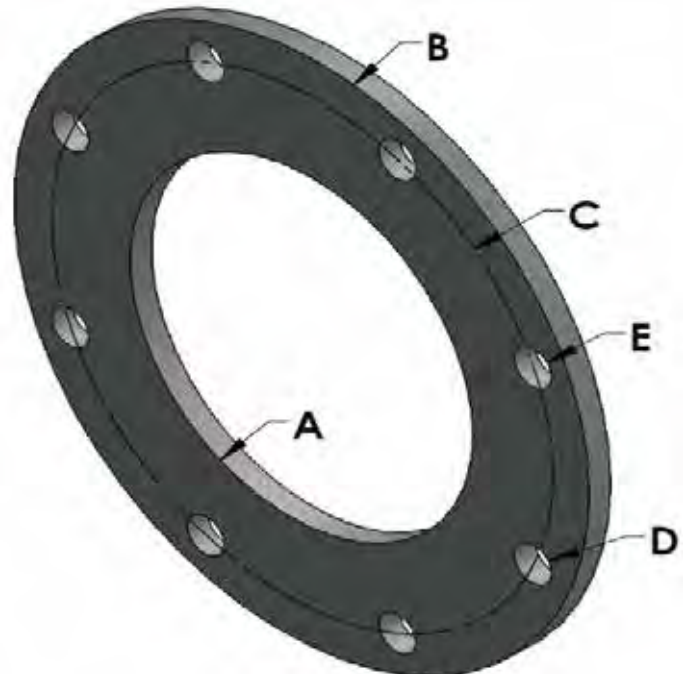
150# ANSI COMPANION FLANGES 1/2" THICK

PIPE SIZE

SIZE	"A"	"B"	"C"	"D"	"E"	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
4"	4.57"	9.00"	7.50"	8	.75"	15-40-36	15-40-304	15-40-316
5"	5.66"	10.00"	8.50"	8	.88"	15-50-36	15-50-304	15-50-316
6"	6.72"	11.00"	9.50"	8	.88"	15-60-36	15-60-304	15-60-316
8"	8.72"	13.50"	11.75"	8	.88"	15-80-36	15-80-304	15-80-316
10"	10.88"	16.00"	14.25"	12	1.00"	15-100-36	15-100-304	15-100-316
12"	12.88"	19.00"	17.00"	12	1.00"	15-120-36	15-120-304	15-120-316
14"	14.19"	21.00"	18.75"	12	1.13"	15-140-36	15-140-304	15-140-316
16"	16.19"	23.50"	21.25"	16	1.13"	15-160-36	15-160-304	15-160-316
18"	18.19"	25.00"	22.75"	16	1.25"	15-180-36	15-180-304	15-180-316
20"	20.19"	27.50"	25.00"	20	1.25"	15-200-36	15-200-304	15-200-316
22"	22.19"	29.50"	27.25"	20	1.38"	15-220-36	15-220-304	15-220-316
24"	24.19"	32.00"	29.50"	20	1.38"	15-240-36	15-240-304	15-240-316
26"	26.25"	34.25"	31.75"	24	1.38"	15-260-36	15-260-304	15-260-316
28"	28.25"	36.50"	34.00"	28	1.38"	15-280-36	15-280-304	15-280-316
30"	30.25"	38.75"	36.00"	28	1.38"	15-300-36	15-300-304	15-300-316
32"	32.25"	41.75"	38.50"	28	1.63"	15-320-36	15-320-304	15-320-316
34"	34.25"	43.75"	40.50"	32	1.63"	15-340-36	15-340-304	15-340-316
36"	36.25"	46.00"	42.75"	32	1.63"	15-360-36	15-360-304	15-360-316
38"	38.25"	48.75"	45.25"	32	1.63"	15-380-36	15-380-304	15-380-316
40"	40.25"	50.75"	47.25"	36	1.63"	15-400-36	15-400-304	15-400-316
42"	42.25"	53.00"	49.50"	36	1.63"	15-420-36	15-420-304	15-420-316
44"	44.25"	55.25"	51.75"	40	1.63"	15-440-36	15-440-304	15-440-316
46"	46.25"	57.25"	53.75"	40	1.63"	15-460-36	15-460-304	15-460-316
48"	48.25"	55.50"	56.00"	44	1.63"	15-480-36	15-480-304	15-480-316

TUBE SIZE

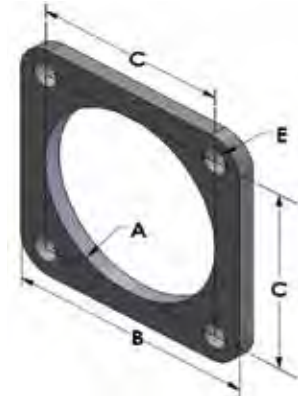
SIZE	"A"	"B"	"C"	"D"	"E"	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
4"	4.06"	9.00"	7.50"	8	.75"	15-4016-36	15-4016-304	15-4016-316
5"	5.06"	10.00"	8.50"	8	.88"	15-5016-36	15-5016-304	15-5016-316
6"	6.06"	11.00"	9.50"	8	.88"	15-6016-36	15-6016-304	15-6016-316
8"	8.06"	13.50"	11.75"	8	.88"	15-8016-36	15-8016-304	15-8016-316
10"	10.06"	16.00"	14.25"	12	1.00"	15-10016-36	15-10016-304	15-10016-316
12"	12.06"	19.00"	17.00"	12	1.00"	15-12016-36	15-12016-304	15-12016-316



ENGINE EXHAUST FLANGES 1/2" THICK

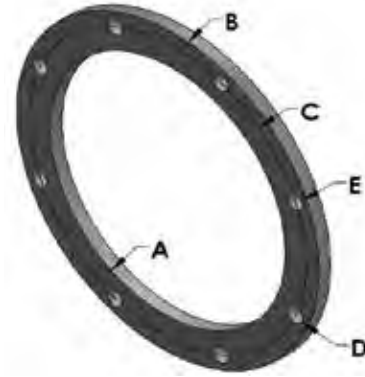
CAT STYLE FLANGES SQUARE

SIZE	*A*	*B*	*C*	*D*	*E*	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
3"	3.57"	5.50"	4.13"	4	.56"	17-1-3030-36	17-1-3030-304	17-1-3030-316
4"	4.06"	5.50"	4.13"	4	.56"	17-1-4040-36	17-1-4040-304	17-1-4040-316
5"	5.06"	6.50"	5.00"	4	0.66"	17-1-5050-36	17-1-5050-304	17-1-5050-316
6"	6.06"	7.75"	6.00"	4	.81"	17-1-6060-36	17-1-6060-304	17-1-6060-316



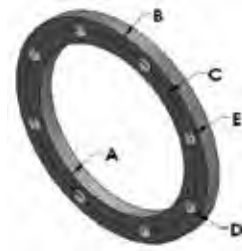
CAT STYLE FLANGES ROUND

SIZE	*A*	*B*	*C*	*D*	*E*	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
8"	8.13"	11.00"	9.88"	8	.56"	17-1-80-36	17-1-80-304	17-1-80-316
10"	10.13"	13.50"	12.44"	12	.50"	17-1-100-36	17-1-100-304	17-1-100-316
12"	12.06"	16.00"	14.80"	12	.56"	17-1-120-36	17-1-120-304	17-1-120-316
14"	14.06"	18.00"	17.00"	12	.56"	17-1-140-36	17-1-140-304	17-1-140-316
16"	16.13"	23.50"	21.25"	16	.80"	17-1-160-36	17-1-160-304	17-1-160-316
18"	18.13"	22.50"	20.88"	16	.63"	17-1-180-36	17-1-180-304	17-1-180-316



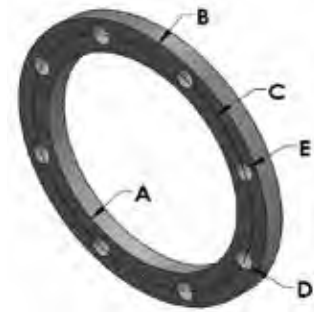
CUMMINS STYLE FLANGES

SIZE	*A*	*B*	*C*	*D*	*E*	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
5"	5.13"	8.00"	7.19"	8	.56"	17-3-50-36	17-3-50-304	17-3-50-316
6"	6.13"	8.00"	7.19"	8	.56"	17-3-60-36	17-3-60-304	17-3-60-316



DETROIT / MTU STYLE FLANGES

SIZE	*A*	*B*	*C*	*D*	*E*	A-36 C/S PART NUMBER	T-304 S/S PART NUMBER	T-316 S/S PART NUMBER
	I.D.	O.D.	B/C	#BH	DIA			
8"	8.13"	11.00"	9.88"	8	.56"	17-2-80-36	17-2-80-304	17-2-80-316
10"	10.06"	13.00"	11.88"	8	.63"	17-2-100-36	17-2-100-304	17-2-100-316

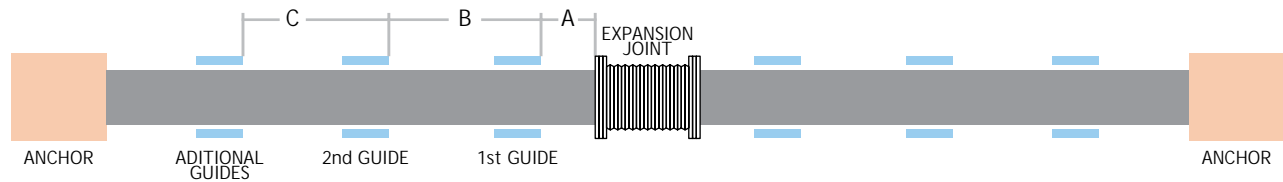


THERMAL EXPANSION OF PIPE AND TUBE

TEMPERATURE	CARBON STEEL	ALLOY STEEL	STAINLESS STEEL
°F	C-Mo 3Cr-Mo	5Cr-Mo THRU 9Cr-Mo	18Cr-8Ni
-25	-0.68	-0.63	-0.98
0	-0.49	-0.46	-0.72
25	-0.32	-0.3	-0.46
50	-0.14	-0.13	-0.21
70	0	0	0
100	0.23	0.22	0.34
125	0.42	0.4	0.62
150	0.61	0.58	0.9
175	0.8	0.76	1.18
200	0.99	0.94	1.46
225	1.21	1.13	1.75
250	1.4	1.33	2.03
275	1.61	1.52	2.32
300	1.82	1.71	2.61
325	2.04	1.9	2.9
350	2.26	2.1	3.2
375	2.48	2.3	3.5
400	2.7	2.5	3.8
425	2.93	2.72	4.1
450	3.16	2.93	4.41
475	3.39	3.14	4.71
500	3.62	3.35	5.01
525	3.86	3.58	5.31
550	4.11	3.8	5.62
575	4.35	4.02	5.93
600	4.6	4.24	6.24
625	4.86	4.47	6.55
650	5.11	4.69	6.87
675	5.37	4.92	7.18
700	5.63	5.14	7.5
725	5.9	5.38	7.82
750	6.16	5.62	8.15
775	6.43	5.86	8.47
800	6.7	6.1	8.8
825	6.97	6.34	9.13
850	7.25	6.59	9.46
875	7.53	6.83	9.79
900	7.81	7.07	10.12
925	8.08	7.31	10.46
950	8.35	7.56	10.8
975	8.62	7.81	11.14
1000	8.89	8.06	11.48
1025	9.17	8.3	11.82
1050	9.46	8.55	12.16
1075	9.75	8.8	12.5
1100	10.04	9.05	12.84
1125	10.31	9.28	13.18
1150	10.57	9.52	13.52
1175	10.83	9.76	13.86
1200	11.1	10	14.2

Thermal expansion per 100 feet of pipe or tube
 For assistance contact our sales / engineering department

ANCHORING AND GUIDING PIPING SYSTEM



PIPE SIZE	A MAX DISTANCE FROM E/J TO 1ST GUIDE OR ANCHOR	B APPROX. DISTANCE BETWEEN 1ST AND 2ND GUIDE	C - APPROX. DISTANCE BETWEEN ADDITIONAL GUIDES (FT)			
			@1-50 PSIG	@50-100 PSIG	@100-150 PSIG	@150-300 PSIG
3/4"	3"	11"	18'	13'	10'	8'
1"	4"	16"	21'	15'	12'	10'
1-1/4"	5"	17"	23'	17'	13'	12'
1-1/2"	6"	21"	28'	20'	17'	13'
2"	8"	28"	32'	23'	18'	15'
2-1/2"	10"	35"	35'	28'	22'	17'
3"	12"	42"	38'	28'	23'	19'
3-1/2"	14"	49"	45'	35'	27'	20'
4"	16"	56"	52'	38'	31'	22'
5"	20"	68"	63'	45'	38'	25'
6"	24"	84"	68'	48'	40'	28'
8"	32"	112"	87'	62'	45'	38'
10"	40"	140"	107'	75'	60'	48'
12"	48"	168"	118'	85'	70'	50'
14"	56"	196"	122'	88'	72'	55'
16"	64"	224"	137'	96'	80'	60'
18"	72"	252"	145'	105'	85'	65'
20"	80"	280"	160'	118'	90'	70'
24"	96"	336"	181'	125'	105'	75'

ANCHORING AND GUIDING

Proper guiding and anchoring is essential to an installation of expansion joints. Pipe guides will prevent the pipe from squirring or buckling during the compression cycle.

Anchors at each end of the pipe run must be stronger than the force needed to compress the joint. Depending upon system pressure, this force may be many thousands of pounds. Guides permit axial movement of the pipe while restraining both lateral and angular movement. The quantity and location of the guides is dependent upon the natural flexibility of the pipe and the pressure rating of the system. Guides should be installed per the above chart.

PROPER ALIGNMENT OF ANCHORS AND GUIDES

The location of the expansion joint also determines proper location of guides and anchors. The illustration below shows 2 guides on each side of the joint because the joint is installed in the middle of the piping run.

BELLOWS DESIGN DATA SHEET EJMA 10th EDITION

Bellows Design Calculation - EJMA 10

Calculation: MM/2017/461 Revision: 0

Supplied by: **TRIAD BELLOWS DESIGN AND MANUFACTURING**

Client: ANY COMPANY	Drawing Number: 50-180-011213	Calculation Date: 5/22/2017
Project No: AC-123456	Drawing Revision: 1	Calculated By: MGM
Project Desc: EXHAUST EXPANSION JOINT	Item Number: 18" PIPE T-321 S/S	Bellows Number: SAMPLE EJMA CALCULATION

Design Data

Design Temp: 1000 F	Axial Movement: -3.250 / 0.000 in	Req. Fatigue Cycles: 10000
Design Press: 5.0 psig	Lateral Movement: 0.000 / 0.375 in	Addit. Fatigue Safety Factor: 1
	Angular Rotation: 0.00 / 0.00 degr	Annealed Bellows: No
		Weld Factor: 0.7

Dimensions

Bellows ID: 18.00 in	Tool Radius: 0.166 in	Nipple Length: 0.0 in
Bellows OD: 20.30 in	Pitch: 0.75 in	Nipple Mass: 0.0 lb
No of Convol: 16	Tangent End ID: 18.00 in	Nipple Angle: 0.00 degr
Layer Thickness: 0.0120 in	Tangent Length: 0.63 in	Pipe End Length: 0.0 in
No of Layers: 2	Collar Length: 0.00 in	Pipe End Thickness: 0.00 in
	Collar Thickness: 0.0000 in	Bellows Type: Unspecified

Materials

Bellows: ASME SA 240 321 2013 ed	Pipe Ends:	Bellows material's Yield: 30,000 psi
Nipple:	Collar:	Bellows in Creep Range: No

Calculation Results

Cd: 1.55	Rated Max Axial Mov Compr Only: 5.9 in	Allow ed Cycles: 195,398
Cf: 1.37	Tot Equivalent Axial Movement: 5.71 in	Convol Depth w: 1.13 in
Cp: 0.71	Bellows Allow able Stress: 16,200 psi	Bellows Length Le: 13.3 in
S1: 1,683 psi	Bellows E at Temperature: 2.28E7 psi	Bellows Length Lb: 12.0 in
S'1: 0 psi	Bellows Yield at Temp by EJMA: 36,180 psi	Bellows Length Lu: 0.0 in
S2: 580 psi	Axial Working Spring Rate: 50 lbs/in	Total Length: 12.0 in
S3: 121 psi	Lateral Working Spring Rate: 191 lbs/in	Thickness tp: 0.0116 in
S4: 8,265 psi	Bending Working Spring Rate: 40 in-lbs/degr	Effective Area Ae: 288.02 in^2
S5: 350 psi	Limiting Column Instability: 6.7 psi	Factor Ku: 1.50
S6: 99,464 psi	Limiting Inplane Instability: 21.3 psi	Thrust Force: 1,440 lbs

EXPANSION JOINT DESIGN STARTS WITH THE METAL BELLOWS

When the exhaust bellows is designed correctly you can be guaranteed years of trouble free service. At Triad Bellows our goal is to engineer metal bellows with both performance and value in mind. We follow the Expansion Joint Manufacturers Association latest 10th Edition guidelines to insure that we meet our goal.

Axial and Lateral Spring Rate: In order to evaluate the loads upon piping, supports, or equipment, it is necessary to determine the axial forces and moments required to move an Expansion Joint. The bellows resistance factor or working spring rate is shown in lbs per inch of compression or extension.

Allowed Cycles: The fatigue life expectancy can be defined as the total number of complete cycles which can be expected from the expansion joint. A cycle is defined as one complete movement from the initial position in the piping system to the operating position and back to the initial position. Cycle Life is theoretical and is dependent upon the maximum stress range to which the bellows is subjected. The fatigue life expectancy of an expansion joint is affected by various factors such as: operating pressure, operating temperature, the material from which the bellows is made, the movement per convolution, the thickness of the bellows, the convolution pitch, the depth and shape of the convolution. Any change in these factors will result in a change in the life of the Expansion Joint. The work hardening of austenitic stainless steel, induced during the forming of convolutions, generally improves the fatigue life of an Expansion Joint often to a marked degree.

Contact Triad Bellows Engineering for other data sheet definitions: (714)-204-4444 or (888) 866-1080

3-YEAR MANUFACTURERS WARRANTY

Warranty against Defects in material and workmanship

(Please refer to the following page for the full terms and conditions):

Subject to the Warranty Terms and Conditions and the Warranty Claim Procedure, Triad Bellows warrants this product to be free of manufacturing or material defect for **3 full years from the date of purchase**.

WARRANTY TERMS AND CONDITIONS

- (a) This warranty is not transferable; it applies only to the original purchaser invoiced by the manufacturer.
- (b) The manufacturer will remedy any bona-fide claim by either, in its sole discretion, repairing or replacing the product free of charge.
- (c) If inspection and testing finds no fault, the purchaser must pay the manufacturer's usual costs of service work, evaluation and testing.
- (d) The manufacturer reserves the right to replace defective parts of the product with parts and components of similar quality, grade and composition where an identical part or component is not available.
- (e) Seller will allow no charge (other than pre-authorized freight charges) for labor, expenses or damages incurred due to defective materials. Except as set forth, no other warranty either expressed or implied is made by the seller to the buyer. **MANUFACTURER SHALL HAVE NO LIABILITY WHATSOEVER FOR PAYMENT OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, INSTALLATION COSTS. MANUFACTURER DISAVOWS ALL CONTINGENT LIABILITY, EXPRESS OR IMPLIED. NOTWITHSTANDING ANYTHING IN THIS WARRANTY TO THE CONTRARY, EXCEPT FOR MANUFACTURER'S AFFIRMATIVE OBLIGATIONS EXPRESSLY SET FORTH IN THIS WARRANTY, MANUFACTURER DISCLAIMS ANY AND ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, REGARDING THE PRODUCT AND ITS FUNCTIONALITY, PERFORMANCE, MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR INTELLECTUAL PROPERTY RIGHTS. MANUFACTURER DISCLAIMS ALL OTHER OBLIGATIONS OR LIABILITIES ON ITS PART AND NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR MANUFACTURER ANY OTHER LIABILITIES IN CONNECTION WITH THE PERFORMANCE OF THE PRODUCT. THIS WARRANTY ONLY COVERS REPLACEMENT PRODUCT OR PARTS THEREOF AND DOES NOT COVER COST OF LABOR OR SERVICES UNDER ANY CIRCUMSTANCES.** This Warranty is to be construed pursuant to the laws of the State of California. Any action or proceeding brought to enforce or declare rights arising out of or relating to this Warranty will be brought exclusively in the State Court in and for the County of Orange, California. You consent to the jurisdiction of said Court and waive any claims of forum non conveniens or any other claims relating to venue.
- (f) The manufacturer is responsible for transit damage that occurs while freight is the manufacturer's possession. Otherwise risk passes to the purchaser once the product leaves the factory.
- (g) Transit damage must be claimed within 2 workdays of receipt.
- (h) Freight costs for warranty claims will be borne by the purchaser from the designated point of delivery. The supplier will only be responsible for return freight from the original delivery point.
- (i) It is the responsibility of the purchaser to ensure that the product is properly packaged for return.
. The manufacturer's responsibilities are not changed by receipt of products which say that "goods are "subject to inspection".
- (j) Claims for damaged products will not be accepted as warranty claim if documentary evidence shows that the purchaser or their agents received the products in good order and condition.
- (k) This warranty does not apply if:
 - i. The product has not been properly installed and maintained in accordance with the manufacturer's instructions or recommendations;
 - ii. The product has been subjected to abuse, improperly treated, neglected, or misused;
 - iii. The product has been exposed to the elements; and/or conditions not designed for;
 - iv. Repairs have been done by an unauthorized person.

Warranty Claim Procedure:

In order to make a warranty claim you must follow the procedure outlined below

1. You must contact Triad Bellows and provide proof of purchase to register a claim.
 2. The purchaser will make a qualifying investigation. You must provide the following to the manufacturer:
 - a. A copy of the proof of purchase.
 - b. The following may be required: photos showing the issue claimed, photos of the installation, operation conditions such as pressure, temperature, movements, flow rates, flow media. – preferably in electronic form for transmission to the supplier. . Clearly state the grounds for the claim and describe any relevant circumstances.
 - d. An assurance that the product has not been damaged, incorrectly assembled, installed or operated, exposed to the elements, negligently treated, or misused. Any false representations may void your claim and constitute a breach of the law.
 3. A provided claim form detailing the claim must be filled out and lodged with your Triad Bellows.
 4. The purchaser will submit the claim in writing to Triad Bellows Design and Mfg, the manufacturer of the product who will handle the claim. You will be contacted by a representative of the manufacturer who will respond to bona fide claims in a timely manner.
 5. The product may only be returned to the manufacturer after approval, in writing, by an authorized representative.
- Manufacturers name; Triad Bellows Design and Manufacturing
2897 East La Cresta Ave, Anaheim CA 92806

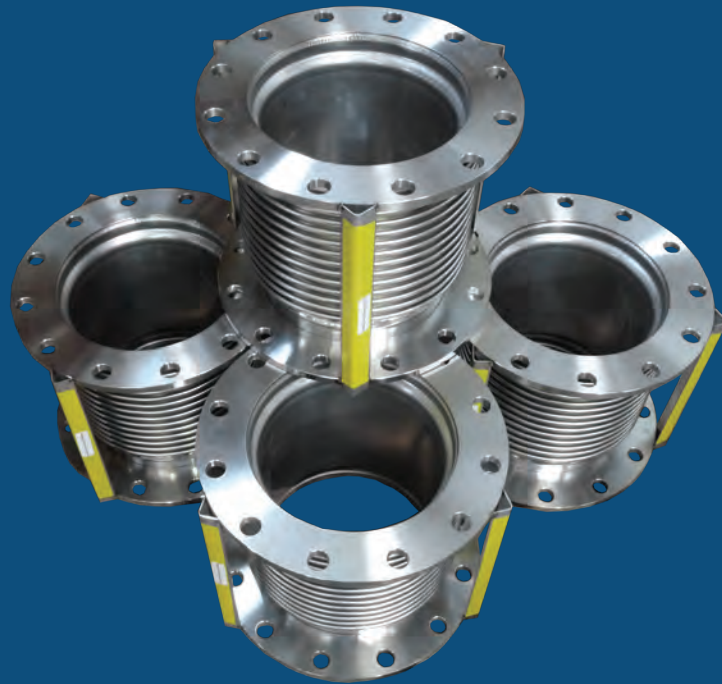


CUSTOM EXPANSION JOINTS



SEND US YOUR INQUIRY

If your flexible piping product requirements are large or small Triad Bellows would like to be your go to manufacturer for metal bellows and expansion joints. We are a med sized company with large company capabilities ready to serve you with quality products at competitive prices, on time deliveries and nice friendly people to work with.



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