

Keflex™ Bellows Type Pump Connectors are designed to compensate for multi-plane axial, lateral and angular movement in non-torsional applications. They are intended for use in both suction and pressure lines to absorb mechanical vibrations caused by pumps, compressors, and other pipeline equipment. Bellows Type Pump Connectors aid in compensating for minor piping misalignment. Heavy-duty restraining rods and spacers assure protection against bellows distortion in the event anchors are not properly secured. Keflex™ chatter-proof spacers absorb mechanical vibration without hampering axial, lateral and angular movement of the pump connector.

Multi-ply bellows were pioneered by Keflex™. Our standard product has a minimum of four (4) plies, but the larger diameter models are constructed with up to sixteen (16) plies. Most of the bellows type pump connectors provided by competitors are “offshore” with only one (1) or two (2) plies.

Unlike rubber and elastomeric connectors, multi-ply laminated stainless steel bellows capsules are not subject to premature deterioration resulting from elevated temperature conditions or UV exposure. Thus, they offer a longer cycle life in a wide variety of temperature applications from sub-zero to super-heated steam. In the latter case, it may be necessary to include the optional internal liner to prevent excessive flow velocity from damaging the assembly. (Available on welded flange units only)

Standard units are designed for a total axial traverse of 5/8” (1/2” compression, 1/8” extension), a total lateral movement of 1/8” (1/16” each side of centerline), and an angular offset of 3-1/2 degrees maximum. Custom built assemblies are available to meet conditions beyond these specifications. Flanged type series 150, 151, and 301-1215 assemblies from 2” to 12” ID measure a compact 5.0” face-to-face to save valuable space. Sizes of 14” ID and up measure 9.0” face-to-face. Custom lengths are always available.

Welded flange types 1512 and 3012 are 6” face-to-face OAL for sizes up to and equaling 8”. They are intended as replacements for short style braided metal hose, rubber and elastomeric spool type expansion joints. For sizes 10” and larger, the standard OAL is 8” face-to-face. Lengths other than standard are available upon request.

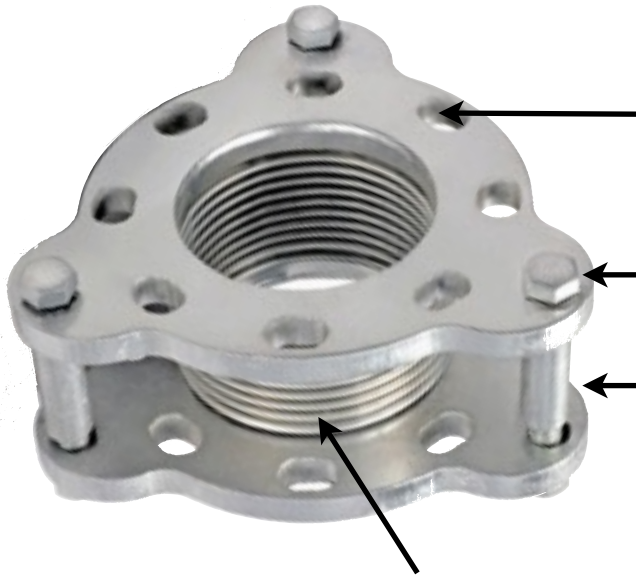


### **Features:**

- *Up to 16 Stainless Steel Plies*
- *Soft Spring Rate*
- *150# or 300# Drilling patterns*
- *Floating (Van Stone) flanges (Optional)*
- *Available in Multiple ID Differentials*
- *Elongated Bolt Holes*
- *Carbon Steel Tie Rods*
- *Chatter-Proof Spacers*

### **Benefits:**

- *Max vibration absorption, safety, and cycle life*
- *Ease of installation*
- *Meets most installation needs*
- *Ease of installation*
- *No Concentric Reducer Required*
- *Ease of Alignment*
- *Prevents Over-elongation*
- *Prevents Over-Compression*



150# or 300# drilling plate flange are standard. Elongated bolt holes assure ease of alignment.

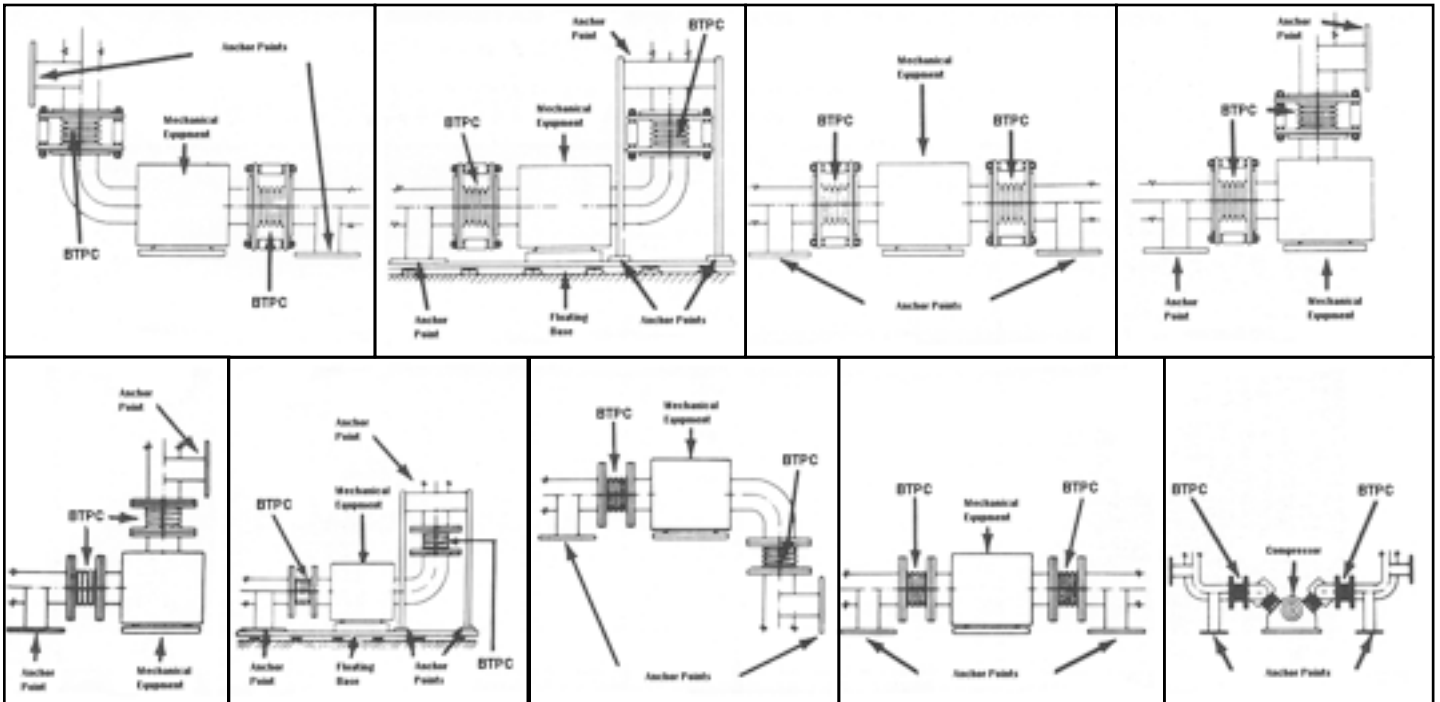
Carbon steel tie rods prevent over-elongation

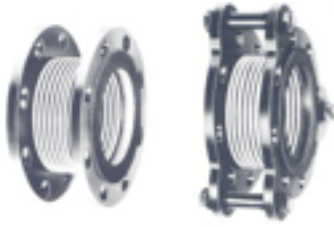
Chatter-proof spacers prevent over-compression

Stainless steel, multi-ply laminated bellows gives flexibility, maximum vibration absorption, safety and long life. (Available in a 150 PSI or 300 PSI pressure carrier.)

## Typical Installation

Depicting proper placement of Bellows Type Pump Connector (BTPC) and Anchors.



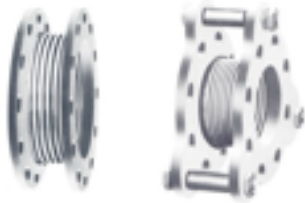


## 150-2115 & 150-TR-2115 (with tie rods)

- 150# Stainless Steel Laminated Multi-ply Bellows
- 150# Drilling Carbon Steel Van Stone Flanges
- Max Working Pressure 150 PSIG
- ALL 5" OAL

150-2115-VS	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	7
2-1/2"	10
3"	12
4"	16
5"	19
6"	21
8"	29
10"	45
12"	69

150-TR-2115-VS	
Approximate Weight (lbs)	Tie-Rods Furnished
17	3
19	3
20	3
24	3
35	3
38	3
50	3
64	4
89	4

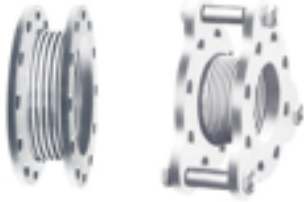


## 151-1215 & 151-TR-1215 (with tie rods)

- 150# Stainless Steel Laminated Multi-ply Bellows
- 150# Drilling Carbon Steel Fixed Flanges
- Max Working Pressure 150 PSIG
- Sizes 2" - 12" have 5" OAL, 14" - 24" have 9" OAL

151-1215	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	6
2-1/2"	9
3"	11
4"	15
5"	18
6"	20
8"	28
10"	44
12"	68
14"	127
16"	149
18"	160
20"	196
24"	240

151-TR-1215	
Approximate Weight (lbs)	Tie-Rods Furnished
17	3
21	3
23	3
25	3
35	3
38	3
50	3
64	4
89	4
160	4
200	4
240	4
290	4
370	4

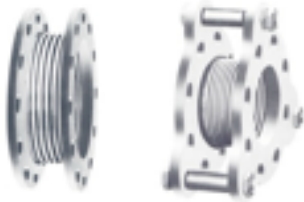


## 301-1215 & 301-TR-1215 (with tie rods)

- 300# Stainless Steel Laminated Multi-ply Bellows
- 150# Drilling Carbon Steel Fixed Flanges
- ALL 5" OAL

301-1215	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	7
2-1/2"	10
3"	12
4"	16
5"	19
6"	21
8"	29
10"	45
12"	69

301-TR-1215	
Approximate Weight (lbs)	Tie-Rods Furnished
17	3
21	3
23	3
25	3
35	3
38	3
50	3
64	4
89	4



## 301-1230 & 301-TR-1230 (with tie rods)

- 300# Stainless Steel Laminated Multi-ply Bellows
- 300# Drilling Carbon Steel Fixed Flanges
- Sizes 2" - 12" have 5.5" OAL, 14" - 24" have 9.5" OAL

301-1230	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	8
2-1/2"	13
3"	14
4"	20
5"	24
6"	27
8"	41
10"	62
12"	86
14"	185
16"	255
18"	300
20"	386
24"	460

301-TR-1230	
Approximate Weight (lbs)	Tie-Rods Furnished
19	4
25	4
28	4
35	4
42	4
57	4
78	4
111	4
178	4
210	4
290	4
360	4
440	4
680	4



## 1512-1215 & 1512-TR-1215 (with tie rods)

- 150# Stainless Steel Laminated Multi-ply Bellows
- 150# Drilling Carbon Steel Fixed Flanges
- Max Working Pressure 150 PSIG
- 2" - 8" have 6" OAL, 10" - 12" have 8" OAL
- **RUBBER EXPANSION JOINT REPLACEMENT SERIES**

1512-1215	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	7
2-1/2"	10
3"	12
4"	16
5"	19
6"	21
8"	29
10"	45
12"	69

1512-TR-1215	
Approximate Weight (lbs)	Tie-Rods Furnished
18	3
22	3
25	3
29	3
33	3
44	3
60	3
78	4
108	4



## 3012-1230 & 3012-TR-1230 (with tie rods)

- 300# Stainless Steel Laminated Multi-ply Bellows
- 300# Drilling Carbon Steel Fixed Flanges
- Max Working Pressure 300 PSIG
- 2" - 8" have 6" OAL, 10" - 12" have 8" OAL
- **RUBBER EXPANSION JOINT REPLACEMENT SERIES**

301-1215	
Size (Nominal I.P.S.)	Approximate Weight (lbs)
2"	12
2-1/2"	14
3"	16
4"	24
5"	29
6"	33
8"	51
10"	76
12"	105

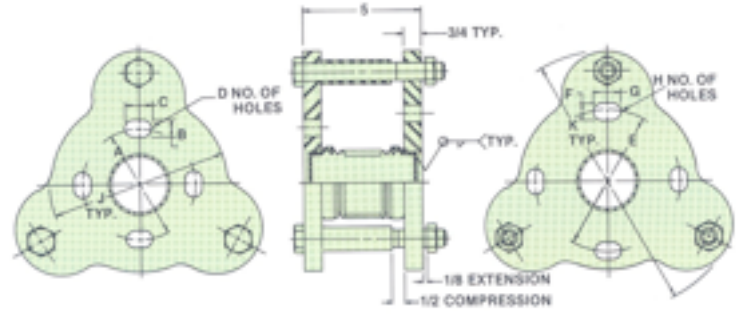
301-TR-1215	
Approximate Weight (lbs)	Tie-Rods Furnished
17	4
21	4
23	4
25	4
35	4
38	4
50	4
64	4
89	4



## 152-TR-1215 (with tie rods)

### Differential Pump Connector

- 150# Stainless Steel Laminated Multi-ply Bellows
- 150# Drilling Carbon Steel Fixed Flanges
- Max Working Pressure 150 PSIG
- 850°F Max Operating Temperature



Pipe Size	Bellows Size	A	B	C	D	E	F	G	H	J	K	Wt. lbs.
2-1/2 x 2	2	4-3/4	3/4	1-1/8	4	5-1/2	3/4	1-1/8	4	7	10-3/4	23
3 x 2	2	4-3/4	3/4	1-1/8	4	6	3/4	1-1/8	4	7-1/2	11-1/4	25
3 x 2-1/2	2-1/2	5-1/2	3/4	1-1/8	4	6	3/4	1-1/8	4	7-1/2	11-1/4	26
4 x 3	3	6	3/4	1-1/8	4	7-1/2	3/4	1-1/8	8	9	12-3/4	27
5 x 4	4	7-1/2	3/4	1-1/8	8	8-1/2	7/8	1-1/4	8	10	13-3/4	30
6 x 4	4	7-1/2	3/4	1-1/8	8	9-1/2	7/8	1-1/4	8	11	14-3/4	39
6 x 5	5	8-1/2	7/8	1-1/4	8	9-1/2	7/8	1-1/4	8	11	14-3/4	40
8 x 6	6	9-1/2	7/8	1-1/4	8	11-3/4	7/8	1-1/4	8	13-1/2	17-1/4	52
10 x 8*	8	11-3/4	7/8	1-1/4	8	14-1/4	1	1-1/2	12	16	19-3/4	75
12 x 10*	10	14-1/2	1	1-1/2	12	17	1	1-1/2	12	19	22-3/4	81

## THRUST FORCE TABLE

Use the tables below to determine the thrust force on an anchor when a Bellows Type Pump Connector is installed.

EJ Nominal Pipe Size	2"	2-1/2"	3"	3-1/2"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Nominal ID Bellows	2-1/2"	3"	3-1/2"	4"	4-1/2"	5-5/8"	6-5/8"	8-5/8"	10-3/4"	12-3/4"	14"	16"	18"	20"	24"
Effective Area Sq. In.	6.02	8.32	11.05	14.81	17.81	27.80	38.75	64.67	96.64	137.19	176.6	226.9	283.4	346.2	490.6
Pressure PSI	Thrust Force Lbs. @ Specified Pressures														
10	60	83	111	148	178	278	338	647	566	1372	1766	2269	2834	3462	4906
20	120	166	222	296	356	556	776	1293	1933	2744	3532	4538	5658	6924	9812
30	181	250	332	444	534	834	1163	1940	2899	4116	5299	6806	8502	10384	14718
40	241	333	442	593	712	1112	1550	2587	3866	5488	7065	9075	11366	13848	19635
50	301	416	553	741	891	1390	1938	3234	4832	6860	8831	11344	14170	17310	24531
60	361	499	663	889	1069	1668	2325	3880	5798	8231	10597	13612	17004	20772	29438
75	451	624	829	1111	1336	2085	2906	4850	7248	10289	13247	17016	21255	25965	36797
100	602	832	1105	1481	1781	2780	3875	6467	9664	13719	17662	22687	28340	34640	49060
125	752	1040	1381	1852	2226	3475	4844	8084	12080	17149	22078	28359	35425	43275	61328
150	903	1248	1658	2222	2672	4170	5813	9700	14496	20579	26493	34031	42510	51930	73594
175	1053	1456	1934	2592	3117	4865	6781	11317	16912	24008	30909	39703	49595	60585	85866
200	1204	1664	2210	2962	3562	5560	7750	12934	19328	27438	35324	43375	56680	69240	98120
225	1354	1872	2486	3333	4407	6255	8719	14550	21744	30868	39740	51047	63765	77895	110396
250	1505	2081	2763	3703	4453	6950	9688	16168	24160	34298	44155	56719	70850	86550	122656
275	1655	2289	3039	4074	4898	7645	10656	17784	26576	37727	48571	62390	779325	95205	134922
300	1805	2497	3315	4444	5343	8340	11625	19401	28992	41157	52986	68062	85020	103860	147188



## FLANGE DETAIL - 150# Drilling & 300# Drilling

Size Nominal I.P.S.	Flange Dimensions—150 Lb. Type				Flange Dimensions—300 Lb. Type			
	Flange OD	Bolt Circle	Bolt Diameter	Bolt Holes	Flange OD	Bolt Circle	Bolt Diameter	Bolt Holes
2"	6"	4.75"	.265"	4	6.5"	5"	.625"	8
2-1/2"	7"	5.5"	.625"	4	7.5"	5.875"	.75"	8
3"	7.5"	6"	.625"	4	8.25"	6.625"	.75"	8
3-1/2"	8.5"	7"	.625"	8	9"	7.25"	.75"	8
4"	9"	7.5"	.625"	8	10"	7.875"	.75"	8
5"	10"	8.5"	.75"	8	11"	9.25"	.75"	8
6"	11"	9.5"	.75"	8	12.5"	10.625"	.75"	12
8"	13.5"	11.75"	.75"	8	15"	13"	.875"	12
10"	16"	14.25"	.875"	12	17.5"	15.25"	1"	16
12"	19"	17"	.875"	12	20.5"	17.75"	1.125"	16
14"	21"	18.75"	1"	12	23"	20.25"	1.125"	20
16"	23.5"	21.25"	1"	16	25.5"	22.5"	1.25"	20
20"	25"	22.75"	1.125"	16	28"	24.75"	1.25"	24
22"	27.5"	25"	1.125"	20	30.5"	27"	1.25"	24
24"	32"	29.5"	1.25"	20	36"	32"	1.5"	24

## DERATING PRESSURES FOR ELEVATED TEMPERATURES

The Keflex™ Series 150 and 151 Bellows Pump Connectors are designed for a maximum working pressure of 150 PSI at ambient (70°) temperature. Likewise, the 301 Series is designed for a maximum of 300 PSI working pressure. When operating at elevated temperatures, it is necessary to derate the maximum pressure capability of the units for normal life expectancy. The table indicates the recommended maximum working pressures for various temperatures. Units should not be subjected to line tests beyond their rated working pressure. If higher pressures are required, please consult the factory.

Temperature		Maximum Rated Pressures			
°F	°C	Working	Design	Working	Design
70	21	150	225	300	450
150	66	143	215	290	435
200	93	140	210	280	420
250	121	135	200	275	410
300	149	130	195	265	395
350	177	127	190	260	390
400	204	125	185	250	375
450	232	120	180	245	365
500	260	115	175	235	350
600	316	110	165	225	335
700	371	105	155	200	300
800	427	100	150	185	275



***Keflex is your single source for pump connectors. Check out our:***

- ▶ Rubber Expansion Joints
- ▶ Gold Series flexible hose
- ▶ Silver Series flexible hose

***Keflex is also your single source for Motion Control Products. Check out our:***

- ▶ 7Q Series Expansion Compensators
- ▶ 308/311 Series Expansion Joints
- ▶ 10MC, 30MC, 1207, 1407 General Purpose Expansion Joints
- ▶ Ke-Loop L, U & V expansion loops
- ▶ Externally Pressurized Expansion Joints

