Standard Bellows for All Purposes

Stock Bellows

Standard Bellows offers a large selection of stock bellows assemblies to meet a variety of design needs. Over thirty-five diametrical sizes, multiple segments, five end plate styles, and high vacuum flanges can be assembled in numerous configurations, without the high cost and long lead time associated with custom assemblies. Standard Bellows has been a reliable supplier of high quality stock bellows for over 30 years.

Delivery:

Part numbers up to 698-498 are assembled from stock and shipped within two (2) weeks.

Part numbers 750-600 and larger are shipped within four (4) weeks.

(Please note, assemblies with more than ten (10) segments or large quantity orders may increase lead time.)

Material:

Bellows convolutions are of Type 347 Stainless Steel. End fittings are of Type 304 or Type 347 Stainless Steel.

Pressure:

Stock bellows are ideal for high vacuum applications; vacuum internal to the bellows is preferred as vacuum external may cause squirm instability. For designs requiring vacuum external or pressures greater than 2 ATM please consult with SBC's engineering staff.

Leak Rate:

Assemblies are 100% leak tested on helium mass spectrometer leak checking machines. All parts are certified to have a leak rate of less than 2×10^{-9} Std. cc/Sec. He.

Life:

Life is typically 5,000 -10,000 cycles with a 1 ATM pressure differential at the stroke values listed. Part numbers 750-600 and larger have lower cycle lives . For higher cycle life requirements please contact SBC's engineering department as greatly improved performance can be obtained for specific applications.

How to Order

1. Select the BASIC PART NUMBER corresponding to the desired diametrical size.
2. Determine the NUMBER OF SEGMENTS required for the desired stroke.
3. Select the END PLATE STYLE for each end of the assembly, OR the appropriate ROMAN NUMERAL for the desired high vacuum flange terminations.

Ordering Examples:

PART NO. 37-12-2-DE

Basic Part No. 37-12	:	.375 in. O.D. x .125 in. I.D.
Segment Number -2	:	Stroke = .30 in. (2 Segments x .15 in./Segment)
End Plate Styles -DE	:	One "D" style closed end and one "E" style tube type end.

PART NO. 189-139-4-II

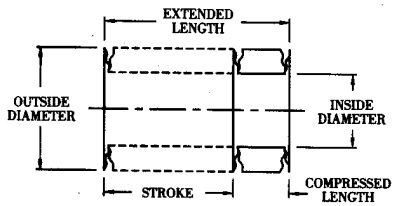
Basic Part No. 189-139	:	1.890 in. O.D. x 1.390 in. I.D.
Segment Number -4	:	Stroke = 2.28 in. (4 Segments x .57 in./Segment)
Flange Style No. -II	:	2-3/4 in. high vacuum flanges with tapped bolt holes, one rotatable, and one non-rotatable flange.

Questions?

Please, feel free to contact Standard Bellows engineering sales staff for additional information or to discuss a welded bellows application. This listing represents only a fraction of Standard Bellows manufacturing capabilities; the engineering department can provide solutions for nearly any welded bellows application.

Basic Bellows Data

The values listed below represent a nominal design, single segment bellows capsule and are subject to manufacturing tolerance variations.

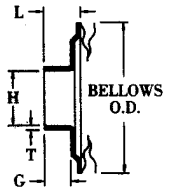


Basic Part No.	Segment Number	Outside Dia. In.	Inside Dia. In.	Stroke In./Seg. ①	Extended Length In./Seg. ①	Compressed Length In./Seg. ①	Effective Area In.² ②	Spring Rate Lb./In.② ③
37-12		.375	.125	.15	.21	.06	.049	9
40-20		.396	.200	.13	.21	.08	.070	19
50-19	S	.500	.190	.17	.33	.16	.093	41
64-34	P	.638	.338	.24	.32	.08	.187	9
75-25	E	.750	.250	.37	.53	.16	.196	14
84-52	C	.835	.515	.26	.34	.08	.358	11
103-55	I	1.030	.550	.34	.50	.16	.490	28
112-50	F	1.125	.500	.60	.79	.19	.518	21
125-75	Y	1.250	.750	.37	.53	.16	.785	33
136-54		1.355	.540	.98	1.20	.22	.705	5
138-83	N	1.375	.830	.50	.69	.19	.955	40
150-96	U	1.500	.960	.41	.57	.16	1.188	28
162-75	M	1.625	.750	.72	.92	.20	1.108	13
189-139	B	1.890	1.390	.57	.74	.17	2.112	17
200-125	E	2.000	1.250	.59	.79	.20	2.074	31
220-104	R	2.200	1.040	1.02	1.22	.20	2.061	8
225-150		2.250	1.500	.63	.79	.16	2.761	37
249-153	O	2.490	1.530	.81	1.01	.20	3.173	18
250-175	F	2.500	1.750	.59	.79	.20	3.547	85
262-125		2.625	1.250	1.20	1.44	.24	2.948	10
275-175	S	2.750	1.750	.85	1.05	.20	3.976	18
300-200	E	3.000	2.000	.85	1.05	.20	4.909	21
325-225	G	3.250	2.250	.81	1.05	.24	5.940	40
350-200	M	3.500	2.000	1.34	1.58	.24	5.940	11
350-250	E	3.500	2.500	.89	1.05	.16	7.069	13
386-326	N	3.860	3.260	.57	.76	.19	9.954	63
399-269	T	3.990	2.690	1.13	1.37	.24	8.762	22
425-320	S	4.250	3.200	.82	1.10	.28	10.898	75
435-364		4.350	3.640	.59	.75	.16	12.535	51
475-375	R	4.750	3.750	.85	1.05	.20	14.186	37
497-400	E	4.970	4.000	.90	1.12	.22	15.798	39
572-403	Q	5.718	4.031	1.69	1.95	.26	18.662	14
600-450	U	6.000	4.500	1.34	1.58	.24	21.648	23
644-540	I	6.440	5.400	.89	1.09	.20	27.525	47
698-498	R	6.979	4.979	1.78	2.10	.32	28.077	26
750-600	E	7.500	6.000	1.34	1.58	.24	35.785	30
950-850	D	9.500	8.500	.81	1.05	.24	63.617	142
1400-1200		14.000	12.000	1.78	2.10	.32	132.732	60

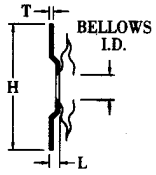
① For a bellows capsule consisting of more than one segment, multiply the value listed by the desired number of segments.

② The value listed represents an average value and may vary with changing conditions, such as convolution pitch and/or pressure differential.

③ For a bellows capsule consisting of more than one segment, divide the value listed by the desired number of segments.



STYLE "A"



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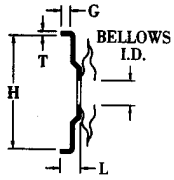

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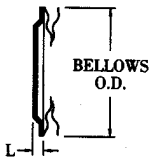

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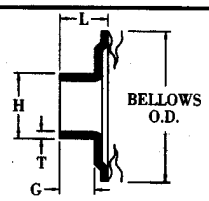


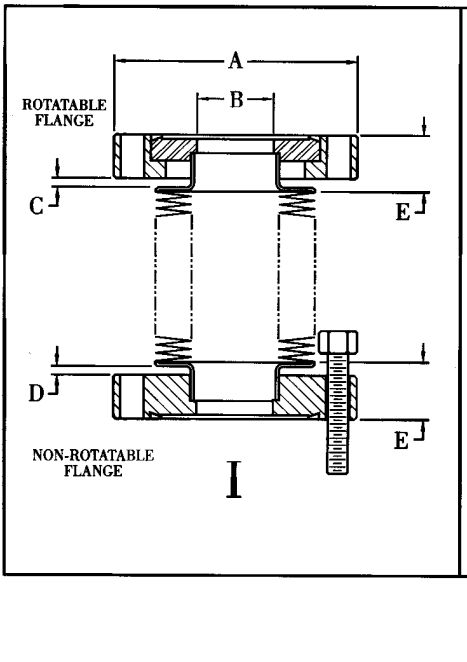
STYLE "E"

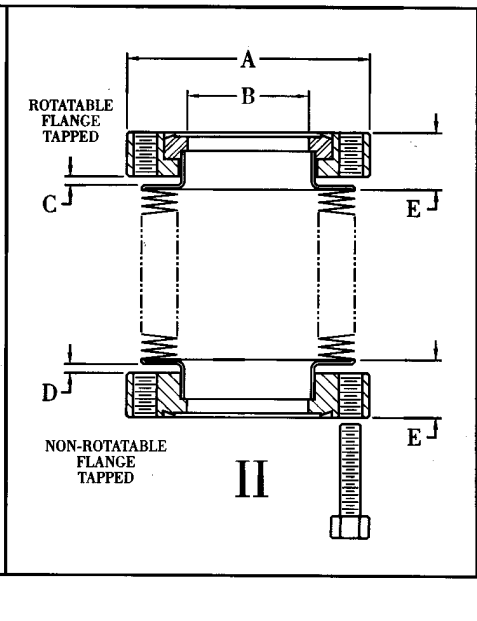
STYLE "A"				STYLE "B"			STYLE "C"				"D"	STYLE "E"			
H* DIA. IN.	G IN.	T IN.	L IN.	H* IN.	T IN.	L IN.	H* DIA. IN.	G IN.	T IN.	L IN.	L IN.	H** DIA. IN.	G IN.	T IN.	L IN.
.125	.030	.004	.040	.500	.004	.013	.385	.022	.004	.035	.014	.250	.250	.035	.300
.188	.050	.008	.070	.500	.008	.025	.380	.050	.008	.075	.035	.250	.250	.035	.300
.255	.050	.008	.070	.625	.008	.030	.505	.060	.008	.090	.035	.312	.250	.035	.300
.380	.055	.010	.075	.750	.010	.025	.630	.060	.010	.095	.050	.437	.375	.035	.407
.380	.060	.010	.080	.967	.010	.020	.755	.080	.010	.130	.050	.500	.375	.035	.430
.568	.060	.010	.080	1.000	.010	.040	.880	.080	.010	.110	.050	.562	.375	.035	.430
.505	.065	.012	.090	1.155	.012	.035	1.065	.100	.012	.135	.062	.687	.375	.035	.430
.630	.065	.012	.090	1.250	.012	.035	1.130	.100	.012	.155	.062	.750	.375	.035	.430
.725	.120	.012	.162	1.375	.012	.045	1.255	.100	.012	.145	.062	.875	.375	.035	.430
.630	.060	.012	.085	1.500	.012	.085	1.380	.100	.012	.185	.062	.937	.375	.035	.430
.880	.075	.012	.100	1.500	.012	.065	1.380	.100	.012	.165	.062	1.000	.375	.035	.430
1.130	.100	.015	.130	1.625	.015	.030	1.505	.100	.015	.130	.078	1.125	.375	.035	.430
.880	.095	.015	.125	1.824	.015	.050	1.630	.125	.015	.175	.078	1.000	.375	.035	.435
1.630	.120	.015	.150	2.025	.015	.060	1.880	.125	.015	.185	.078	1.500	.375	.035	.435
1.380	.110	.015	.140	2.187	.015	.045	2.010	.125	.015	.170	.078	1.250	.375	.035	.435
1.130	.100	.015	.130	2.375	.015	.035	2.255	.125	.015	.205	.094	1.500	.375	.035	.435
1.765	.130	.015	.175	2.375	.015	.035	2.265	.115	.015	.160	.045	1.500	.375	.035	.435
1.630	.120	.015	.150	2.680	.015	.100	2.510	.125	.015	.190	.094	1.625	.375	.049	.435
1.880	.120	.015	.150	2.680	.015	.065	2.510	.125	.015	.190	.094	1.875	.375	.035	.435
1.380	.110	.015	.140	2.812	.015	.085	2.760	.140	.015	.225	.109	1.875	.375	.035	.435
1.880	.120	.015	.150	2.937	.015	.050	2.760	.140	.015	.190	.109	1.875	.375	.035	.435
1.760	.140	.020	.170	3.125	.015	.050	3.010	.140	.015	.190	.125	2.125	.500	.065	.590
2.385	.140	.015	.170	3.437	.015	.065	3.260	.140	.015	.205	.125	2.250	.500	.065	.590
2.135	.140	.015	.170	3.687	.015	.125	3.510	.140	.015	.265	.125	2.375	.500	.065	.590
2.635	.140	.015	.170	3.687	.015	.040	3.510	.140	.015	.180	.125	2.625	.500	.065	.590
3.510	.160	.020	.200	4.125	.020	.050	4.010	.150	.020	.200	.125	3.250	.500	.065	.590
2.890	.160	.020	.200	4.125	.020	.045	4.020	.150	.020	.190	.125	2.750	.500	.065	.590
3.500	.180	.020	.240	4.375	.020	.085	4.290	.180	.020	.260	.060	3.750	.500	.065	.590
3.760	.180	.020	.220	4.625	.020	.060	4.510	.180	.020	.225	.125	3.750	.500	.065	.590
4.010	.180	.020	.220	5.000	.020	.090	4.760	.180	.020	.270	.125	4.000	.500	.065	.590
4.260	.200	.020	.240	5.125	.020	.050	5.015	.200	.020	.305	.125	4.250	.500	.065	.590
											.187	4.250	.500	.065	.590
											.187	5.000	.500	.065	.590
											.187	6.000	.500	.083	.590
											.187	5.000	.500	.065	.590
											.187	6.000	.500	.083	.590
											.250	8.000	.500	.083	.590
											.250	12.750	.500	.180	.680

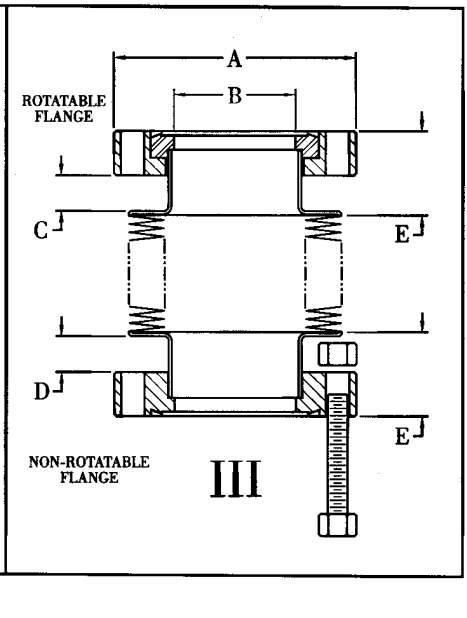
* Tolerance .188 to 1.505 ±.002
1.510 to 3.010 ±.003
3.015 to 5.015 ±.004
5.020 to 8.000 ±.015

** Tolerance per applicable SST tubing/pipe specification ASTM A-269 or A-530

High Vacuum Flange Assemblies







Basic Part No.	Segment No.	Style No.	Dia. A. (Nominal) In.	Dia. B (Nominal) In.	Dim. C In.	Dim. D In.	Dim. E In.
75-25	SEE BASIC BELLOWS DATA	I	1-1/3	.43	.10	.10	.42
103-55		II	1-1/3	.62	.10	.10	.42
103-55		III	1-1/3	.62	.35	.35	.67
150-96		I	2-3/4	.93	.10	.10	.64
189-139		II	2-3/4	1.43	.10	.10	.64
189-139		III	2-3/4	1.43	.40	.40	.94
225-150		II	2-3/4	1.43	.10	.10	.64
225-150		III	2-3/4	1.43	.40	.40	.94
200-125		I	3-3/8	1.43	.10	.16	.82
300-200		II	3-3/8	1.87	.10	.16	.85
300-200		III	3-3/8	1.87	.40	.46	1.15
275-175		I	4-1/2	1.87	.10	.17	.92
350-250		II	4-1/2	2.37	.10	.17	.92
350-250		III	4-1/2	2.37	.40	.47	1.22
497-400		III	6	3.87	.50	.56	1.41
750-600		III	8	5.83	.50	.56	1.51
950-850		III	10	7.83	.50	.50	1.54

NOTE: ALL VALUES ARE SUBJECT TO THE FLANGE MANUFACTURERS TOLERANCE VARIATIONS.