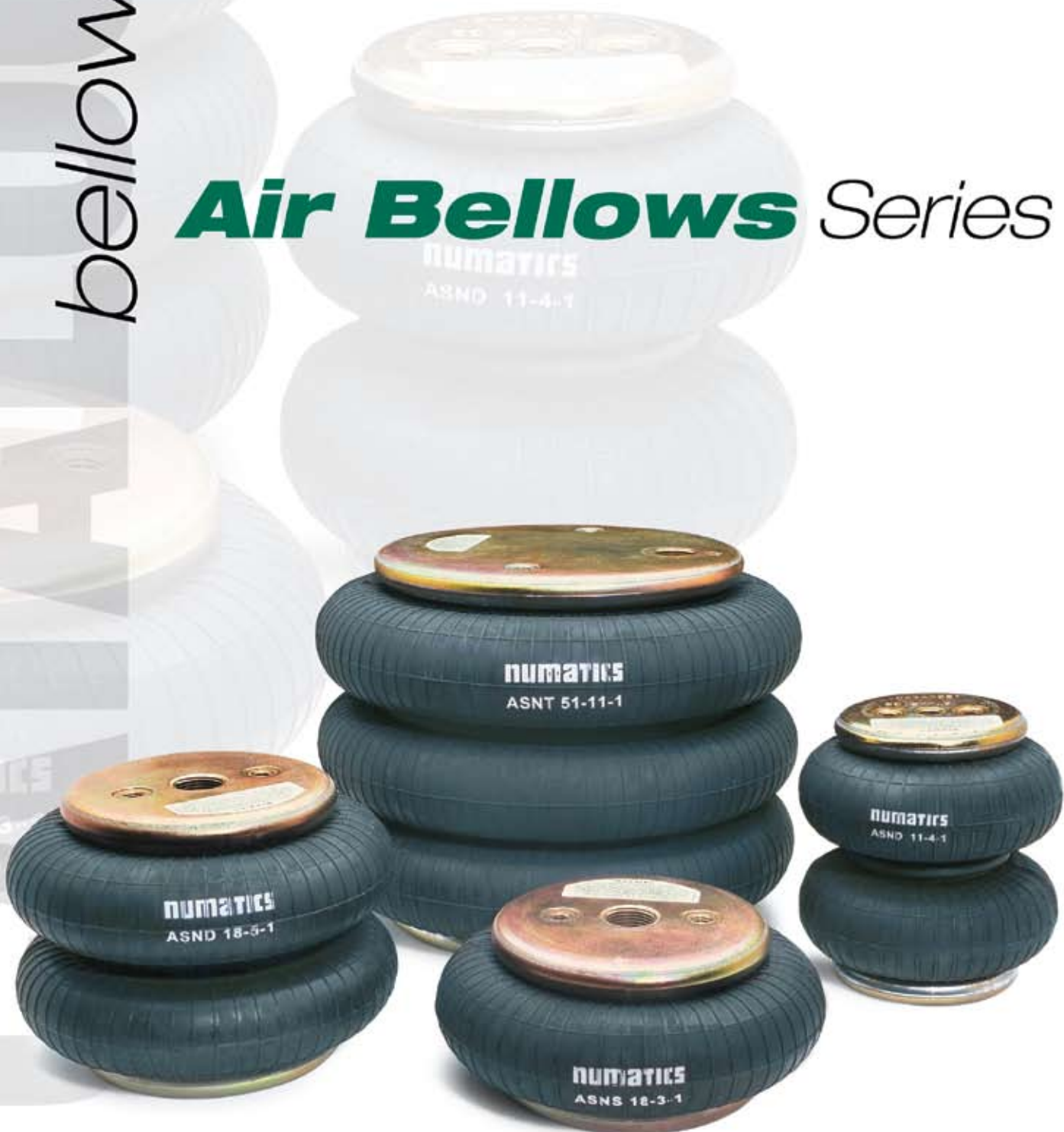


bellows

Air Bellows Series



numatics®

Air Bellows 3-33

Single Convoluted..... 3-13

ASNS10-2-1	3
ASNS11-1-1	4
ASNS11-2-1	5
ASNS11-3-1	6
ASNS18-3-1	7
ASNS18-4-1	8
ASNS18-5-1	9
ASNS31-3-1	10
ASNS51-3-1	11
ASNS82-4-1	12
ASNS82-5-1	13

Double Convoluted..... 14-25

ASND10-4-1	14
ASND11-4-1	15
ASND18-4-1	16
ASND18-5-1	17
ASND18-6-1	18
ASND31-6-1	19
ASND31-8-1	20
ASND51-7-1	21
ASND51-8-1	22
ASND82-7-1	23
ASND82-10-1	24
ASND154-8-1	25

Triple Convoluted..... 26-28

ASNT51-11-1.....	26
ASNT82-12-1	27
ASNT154-12-1	28

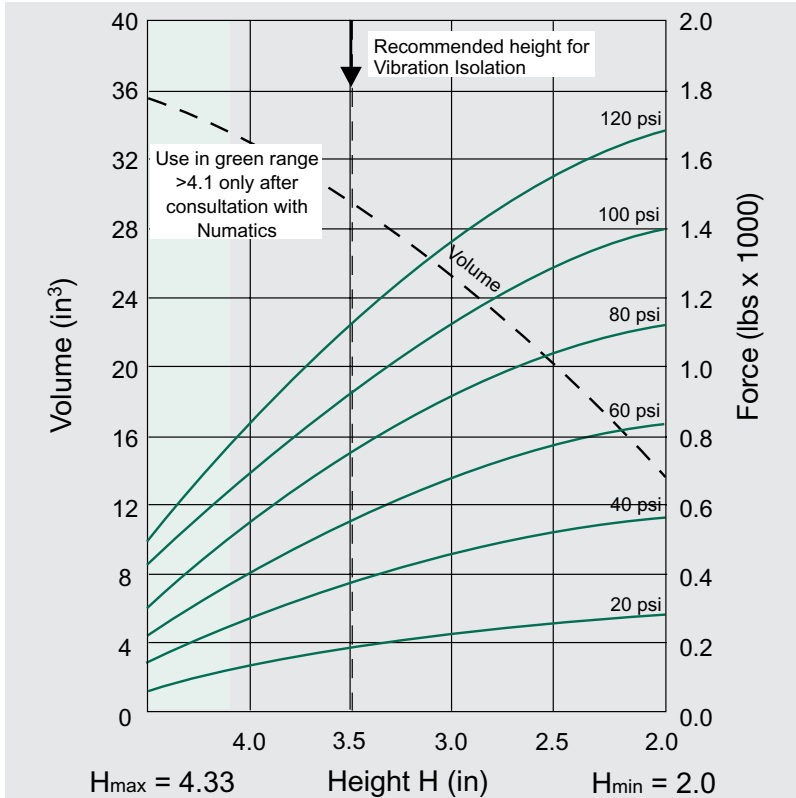
Sleeve Type..... 29-33

ASNC2-1-1	29
ASNC6-1-1	30
ASNC6-2-1	31
ASNC6-3-1	32
ASNC8-4-1	33

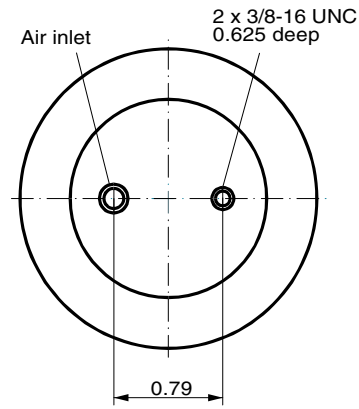
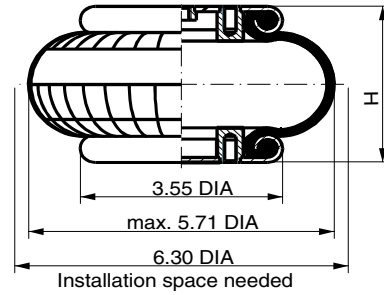


Numatics Single Convoluted Air Bellows

ASNS10-2-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 27 lbs
Overall Weight with Clamped Plates	2.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 3.5 Inch, Minimum 2.7 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	350	530	700	800	1060		
Spring Rate (lbs/in)	399	585	768	905	1075	30	
Natural Frequency (Hz)	3.5	3.3	3.3	3.3	3.2		

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	4	120	250	370	490	620	740	34
	3	220	450	670	890	1110	1340	26
	2	280	560	850	1130	1410	1690	14

ORDER DATA

Type	Model Number
With Clamped Plates 1/8 NPTF air inlet	ASNS10-2-1

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/8" NPTF = 12-15 lb-ft

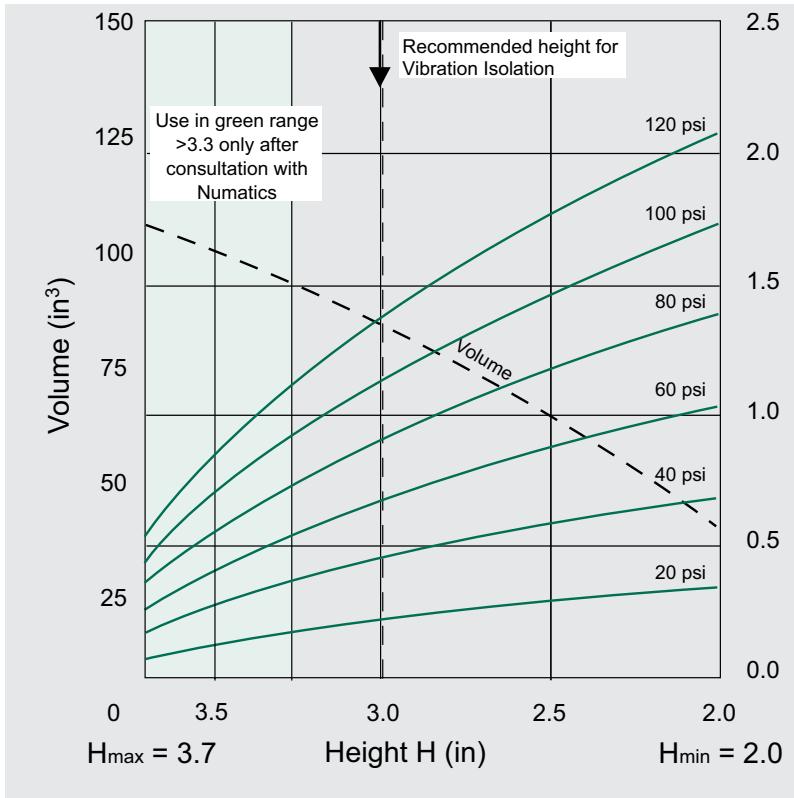


Air Bellows Series

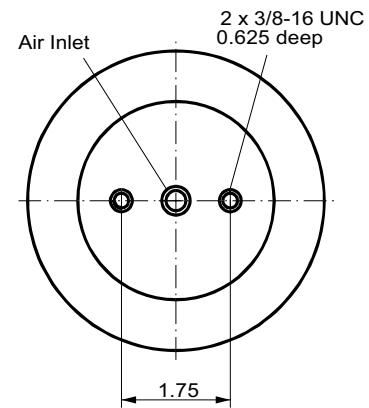
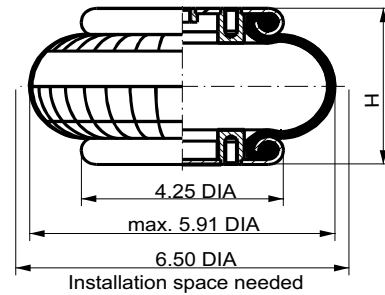
NUMATICS®

Numatics Single Convoluted Air Bellows

ASNS11-1-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 56 lbs
Overall Weight with Clamped Plates	2.7 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 3.0 Inch, Minimum 2.7 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	460	680	910	1140	1370	
Spring Rate (lbs/in)	793	1128	1442	1710	1972	24
Natural Frequency (Hz)	3.9	3.8	3.7	3.7	3.6	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								Vol (in ³)
Pressure p (psi)	20	40	60	80	100	120		
Height H (in)	3	230	460	680	910	1140	1370	24
	2.5	290	580	880	1170	1460	1750	20
	2	350	690	1040	1390	1740	2080	12

ORDER DATA

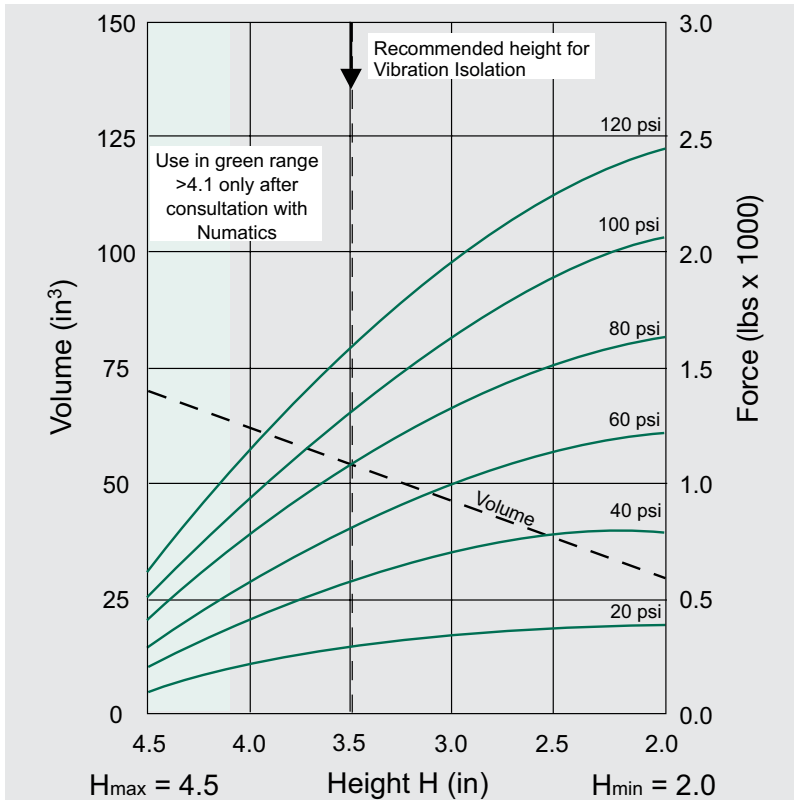
Type	Model Number
With clamped plates 1/4 NPTF air inlet	ASNS11-1-1

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet - 1/4" NPTF = 12-15 lb-ft

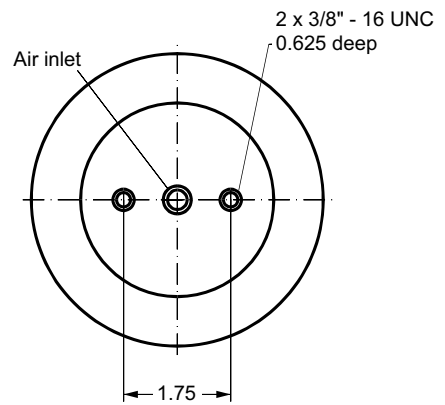
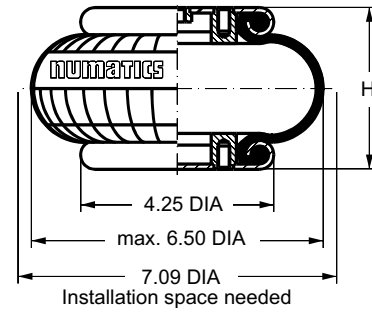


Numatics Single Convoluted Air Bellows

ASNS11-2-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	2.7 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 3.5 Inch, Minimum 2.7 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	530	790	1060	1320	1590	
Spring Rate (lbs/in)	619	874	1146	1333	1571	54
Natural Frequency (Hz)	3.5	3.4	3.3	3.3	3.2	

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in) 5	190	380	570	750	940	1130	62
4	330	650	980	1310	1640	1960	46
3	410	820	1240	1650	2060	2470	28

ORDER DATA

Type	Model Number
With Clamped Plates 1/4 NPTF Air Inlet	ASNS11-2-1

Additional types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

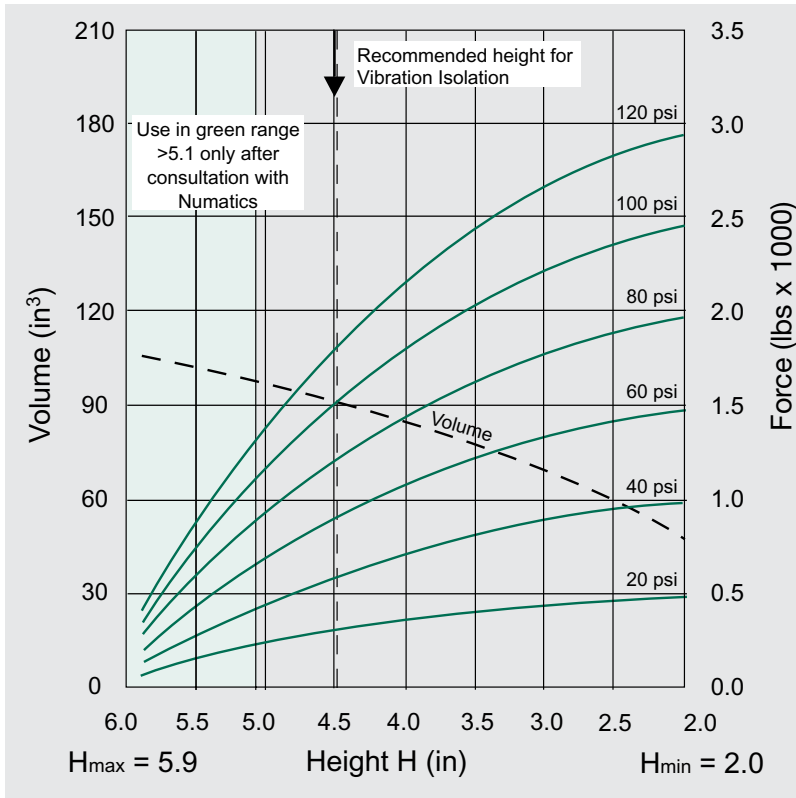


Air Bellows Series

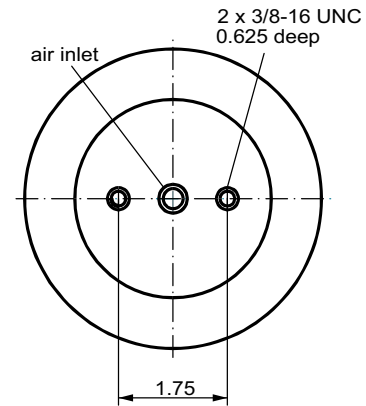
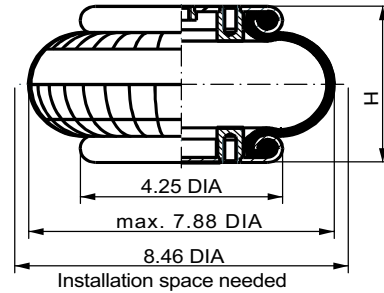
NUMATICS®

Numatics Single Convoluted Air Bellows

ASNS11-3-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	3.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 4.5 Inch, Minimum 4.0 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	620	930	1240	1550	1850	
Spring Rate (lbs/in)	449	655	844	1035	1211	90
Natural Frequency (Hz)	2.7	2.6	2.6	2.6	2.5	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								Vol (in ³)
Pressure p (psi)	20	40	60	80	100	120		
Height H (in)	5	230	460	690	910	1140	1370	96
	4.5	300	600	910	1210	1510	1810	91
	4	360	720	1080	1440	1800	2150	85
	3.5	410	820	1230	1630	2040	2450	77
	3	440	890	1330	1770	2210	2660	69
	2.5	470	940	1410	1880	2350	2820	60

ORDER DATA

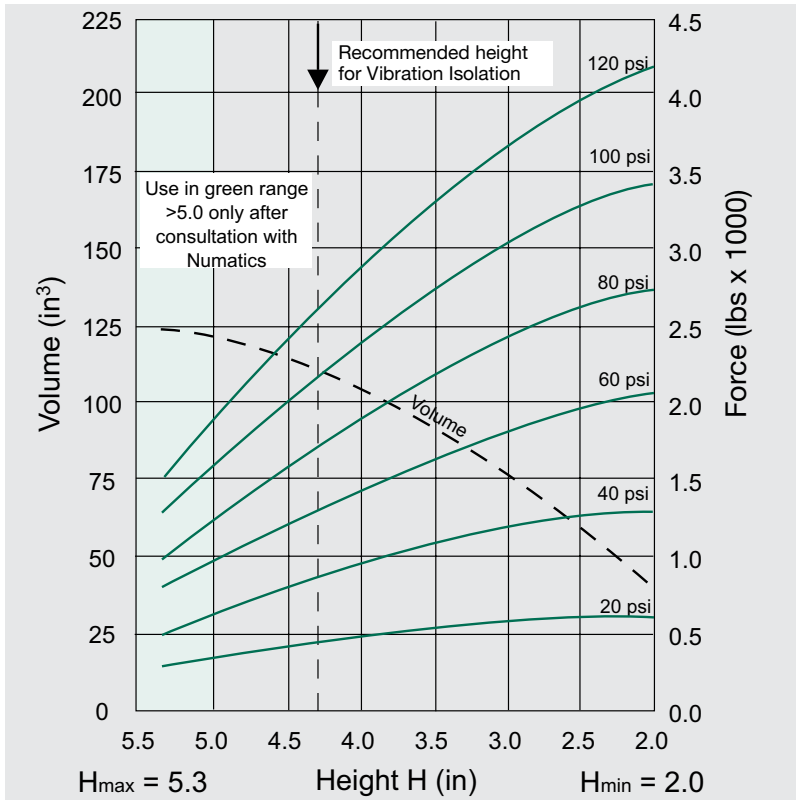
Type	Model Number
With clamped plates 1/4 NPTF air inlet	ASNS11-3-1

Installation Instructions - Torque rating
 Mounting Holes - 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

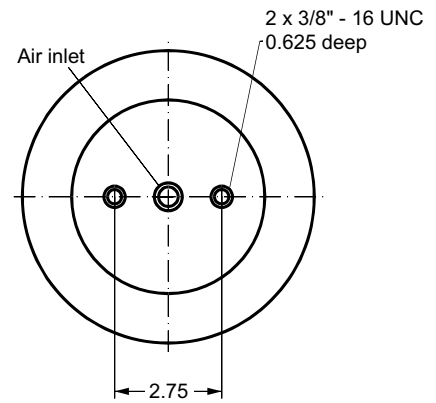
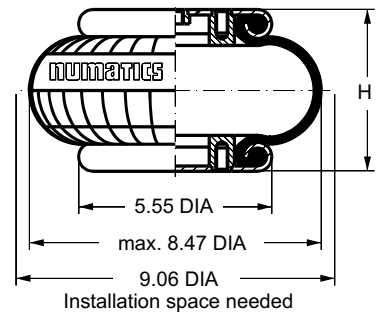


Numatics Single Convoluted Air Bellows

ASNS18-3-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	4.5 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 4.4 Inch, Minimum 3.5 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	820	1230	1640	2050	2460		
Spring Rate (lbs/in)	690	957	1213	1426	1677	111	
Natural Frequency (Hz)	2.9	2.8	2.7	2.6	2.6		

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	5	300	600	900	1200	1500	1800
	4	470	950	1420	1900	2370	2850
	3	600	1200	1800	2410	3010	3610
	2	690	1370	2060	2750	3430	4120

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNS18-3-1
1/4 NPTF Air Inlet	ASNS18-3-1-2

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

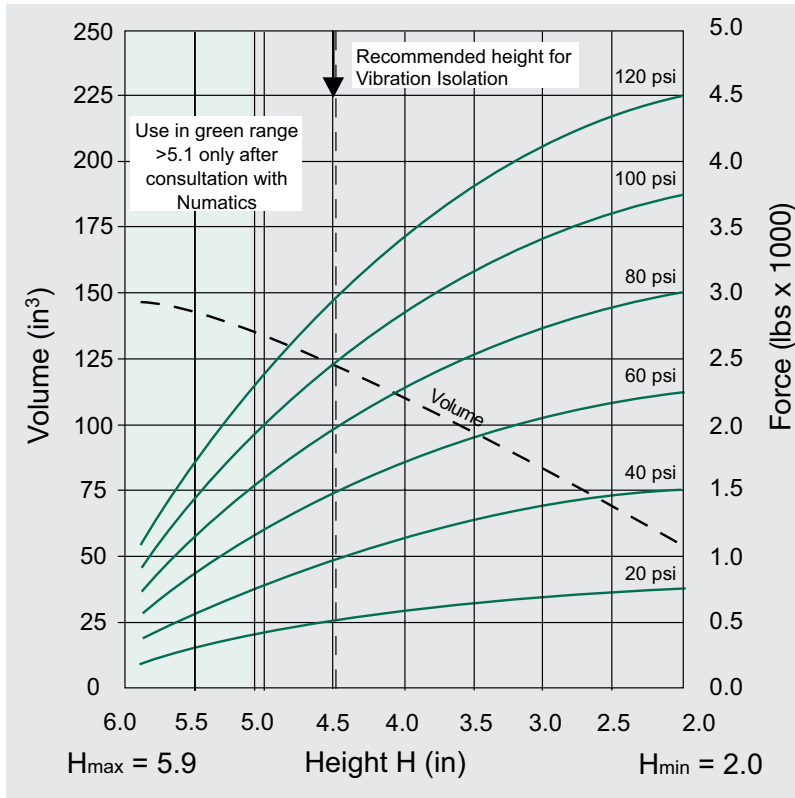


Air Bellows Series

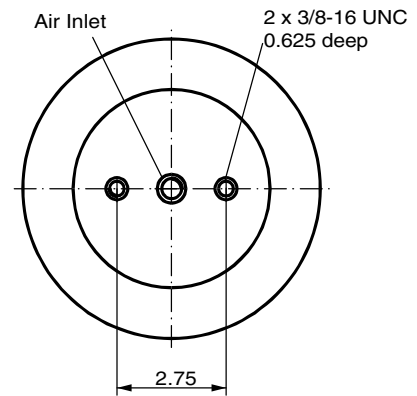
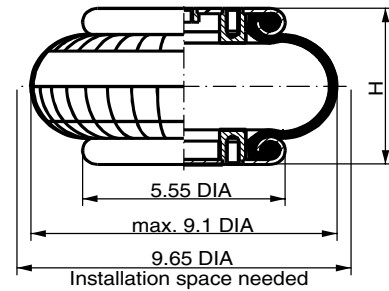
NUMATICS®

Numatics Single Convolute Air Bellows

ASNS18-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	4.2 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 4.5 Inch, Minimum 3.9 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in³)
Force (Load) (lbs)	970	1450	1940	2420	2910	
Spring Rate (lbs/in)	693	1004	1316	1558	1866	123
Natural Frequency (Hz)	2.7	2.6	2.6	2.6	2.5	

Pneumatic Application – Static Characteristic Values

Pressure p (psi)	20	40	60	80	100	120	Vol (in³)
Force F (lbs)							
Height H (in)	5	390	790	1180	1580	1970	2360
	4.5	480	970	1450	1940	2420	2910
	4	570	1130	1700	2270	2830	3400
	3.5	630	1260	1890	2530	3160	3790
	3	690	1380	2060	2750	3440	4130
	2.5	720	1450	2170	2890	3620	4340

ORDER DATA

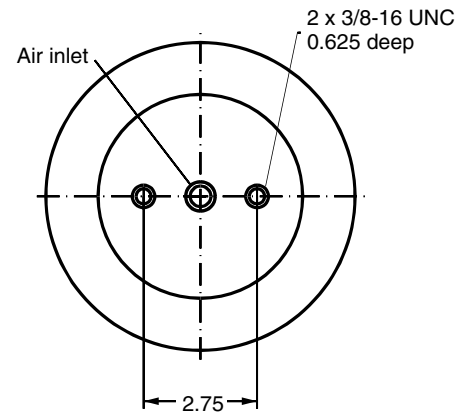
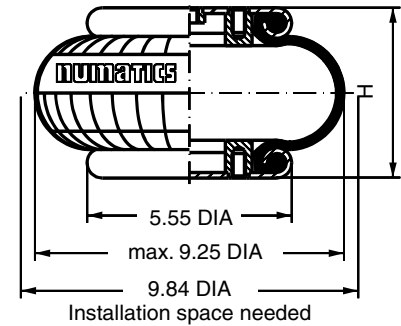
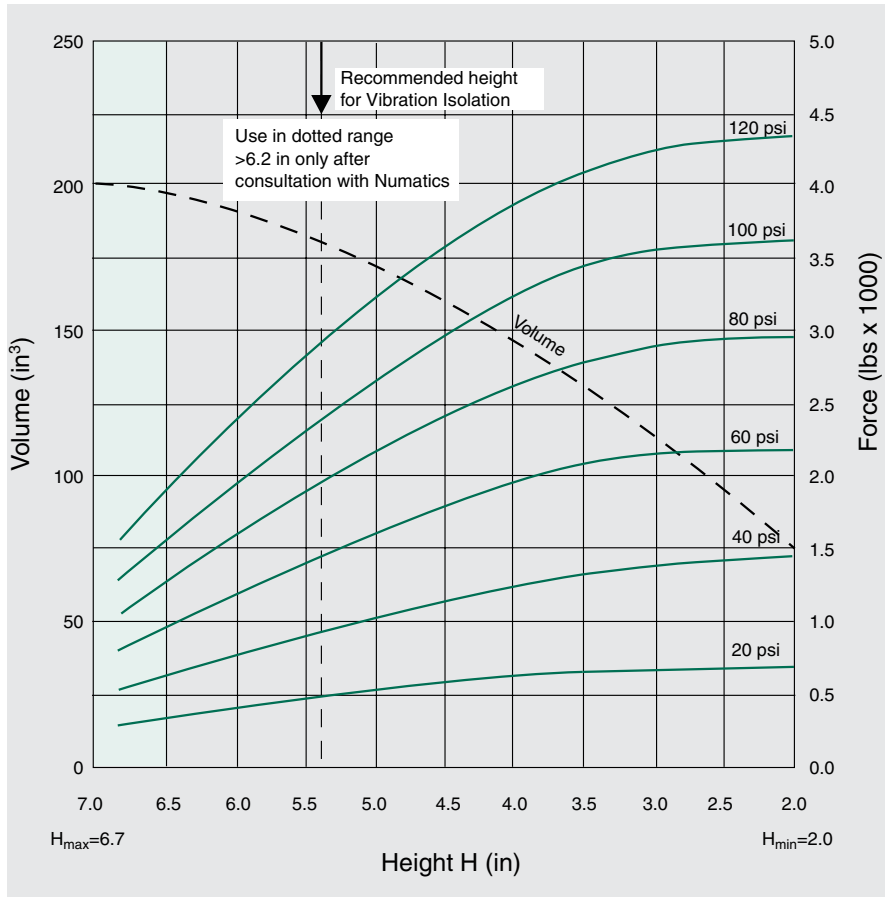
Type	Model Number
With clamped plates	
3/4 NPTF air inlet	ASNS18-4-1
1/4 NPTF air inlet	ASNS18-4-1-2
Additional types on request	

Installation Instructions - Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft



Numatics Single Convoluted Air Spring

ASNS18-5-1



Force-Height Diagram

TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	4.2 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 5.5 Inch, Minimum 4.92 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	950	1420	1890	2370	2840		
Spring Rate (lbs/in)	609	856	1090	1294	1524	173	
Natural Frequency (Hz)	2.9	2.8	2.7	2.6	2.6		

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	6	400	790	1190	1580	1980	2370	181
	5.5	470	950	1420	1890	2370	2840	173
	5	540	1080	1610	2150	2690	3230	162
	4.5	500	1180	1770	2360	3960	4550	150
	4	640	1280	1910	2550	3190	3830	136
	3.5	670	1340	2020	2690	3360	4030	122
	3	700	1390	2090	2790	3490	4180	107

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNS18-5-1
1/4 NPTF Air Inlet	ASNS18-5-1-2

Additional types on request.

Installation Instruction –
 3/8-16 UNC = 15-20 LBxFT
 Mounting holes - 3/8" = 15-20 lb-ft
 3/4 NPTF = 40-50 LBxFT
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

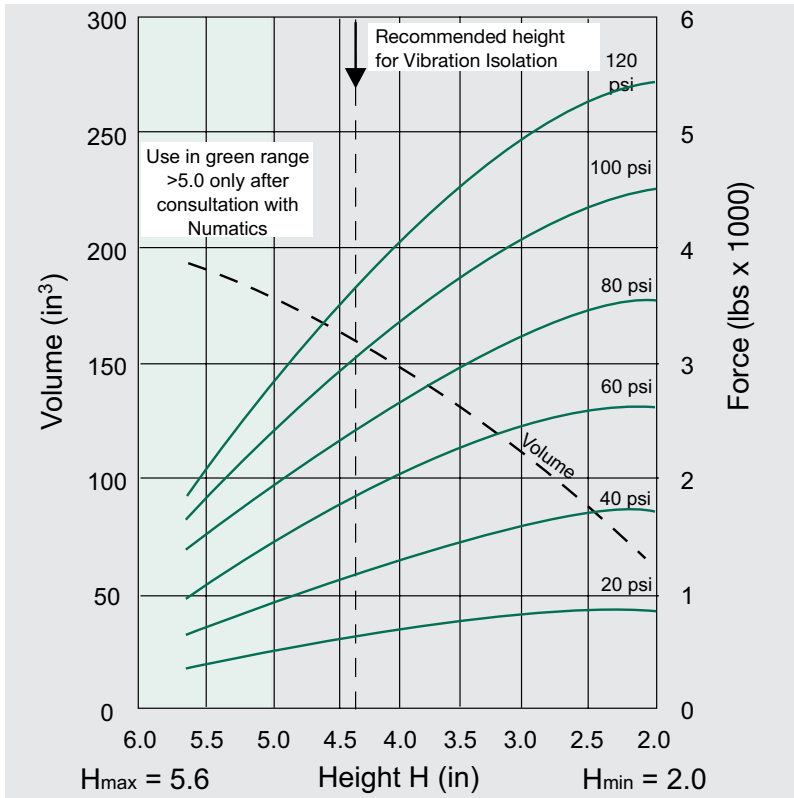


Air Bellows Series

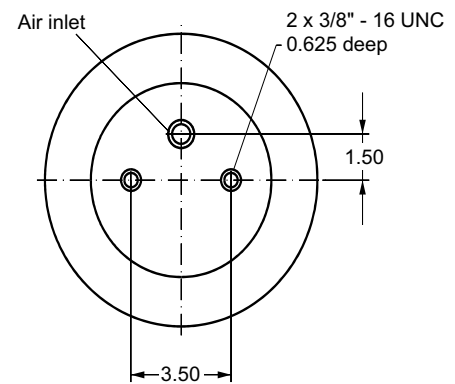
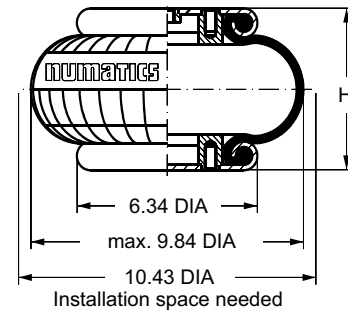
NUMATICS®

Numatics Single Convoluted Air Bellows

ASNS31-3-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	5.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 4.4 Inch, Minimum 3.5 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	1200	1810	2410	3010	3610	
Spring Rate (lbs/in)	787	1211	1638	2081	2510	166
Natural Frequency (Hz)	2.5	2.6	2.6	2.6	2.6	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	5	470	950	1420	1890	2370	2840	179
	4	670	1350	2020	2690	3360	4040	144
	3	820	1640	2460	3280	4100	4930	105
	2	920	1830	2750	3670	4580	5500	62

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNS18-3-1
1/4 NPTF Air Inlet	ASNS18-3-1-2

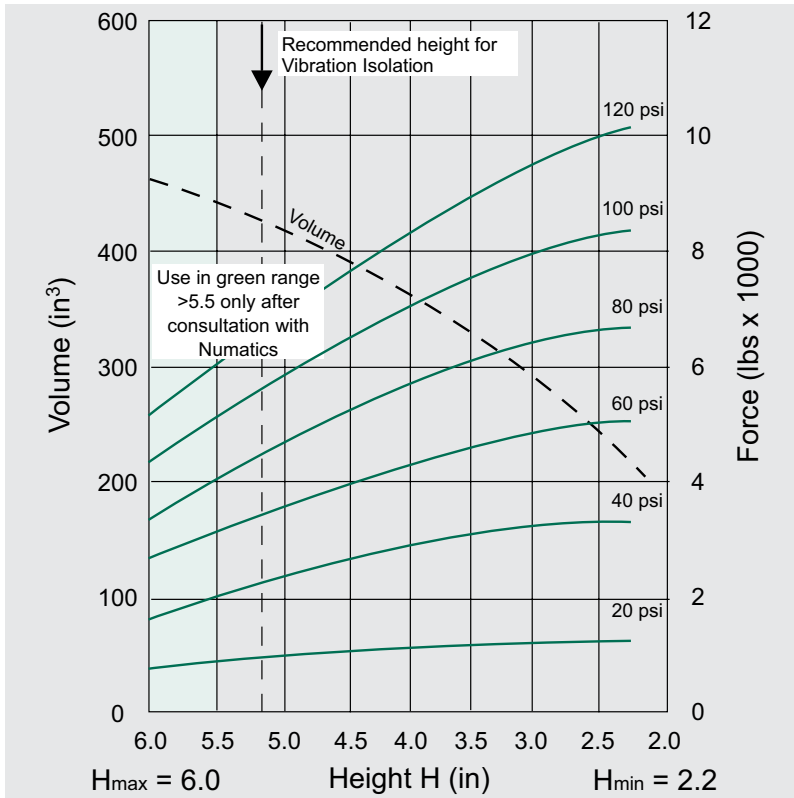
Additional Types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft

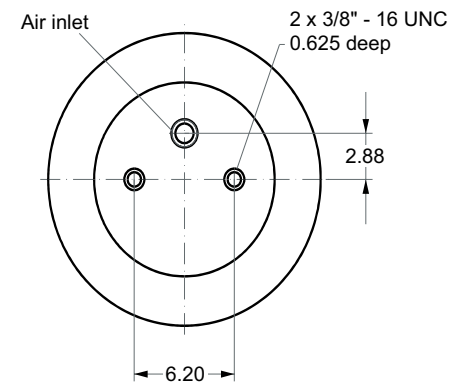
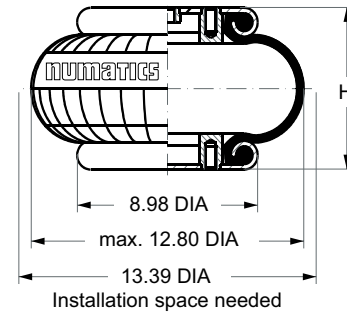


Numatics Single Convoluted Air Bellows

ASNS51-3-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	9.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 5.1 Inch, Minimum 3.9 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	2450	3680	4900	6130	7350	
Spring Rate (lbs/in)	1388	1943	2479	2939	3466	415
Natural Frequency (Hz)	2.4	2.3	2.2	2.2	2.2	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	5	1150	2300	3450	4600	5760	6910	412
	4	1400	2800	4210	5610	7010	8410	341
	3	1590	3180	4760	6350	7940	9530	285

ORDER DATA

Type	Model Number
With clamped plates	
3/4" NPTF air inlet	
2.8 inch excentrical	ASNS51-3-1
1/4" NPTF Air Inlet	ASNS51-3-1-2

Additional Types on request

Installation instruction - Torque Rating
 Mounting Holes 3/8" = 15-20 LB-FT
 Air Inlet 3/4" NPTF = 40-50 LB-FT
 Air Inlet 1/4" NPTF = 12-15 LB-FT

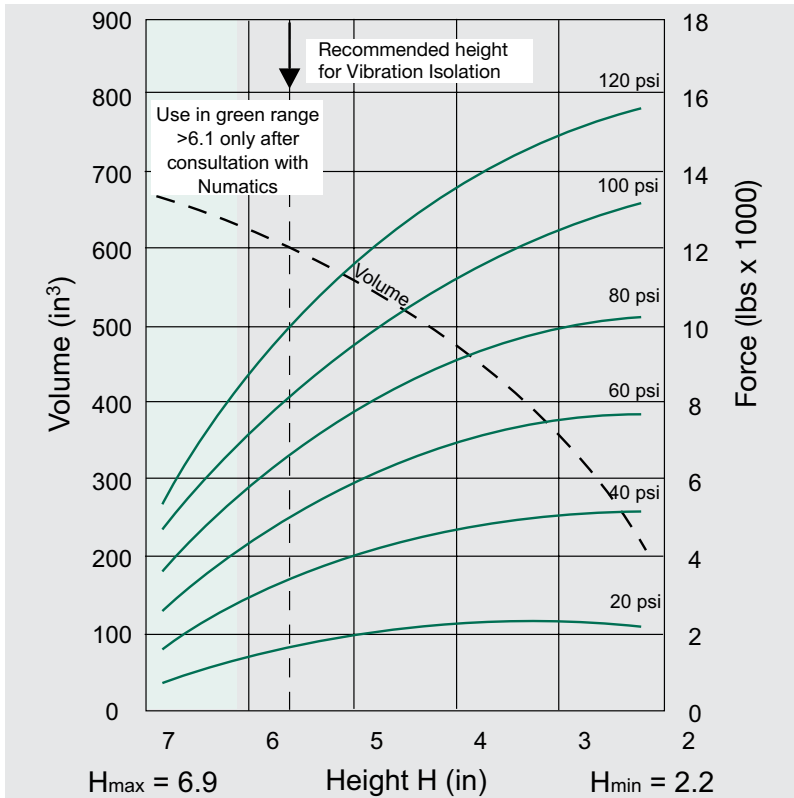


Air Bellows Series

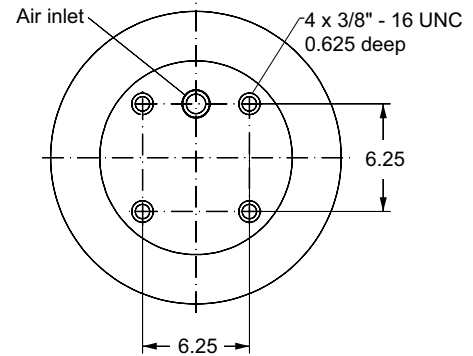
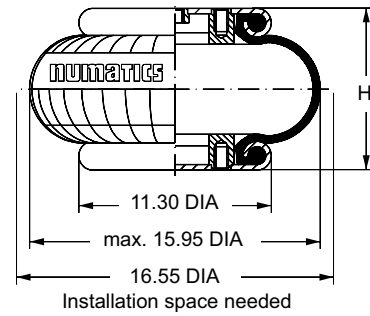
NUMATICS®

Numatics Single Convolute Air Bellows

ASNS82-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	12.9 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 5.7 Inch, Minimum 4.3 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	3260	4900	6530	8160	9790		
Spring Rate (lbs/in)	2084	2953	3830	4572	5403	607	
Natural Frequency (Hz)	2.5	2.4	2.4	2.4	2.3		

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	6	1480	2970	4450	5940	7420	8910	621
	5	1930	3860	5790	7720	9660	11,590	564
	4	2260	4510	6770	9020	11,280	13,540	482
	3	2480	4970	7450	9930	12,410	14,900	357

ORDER DATA

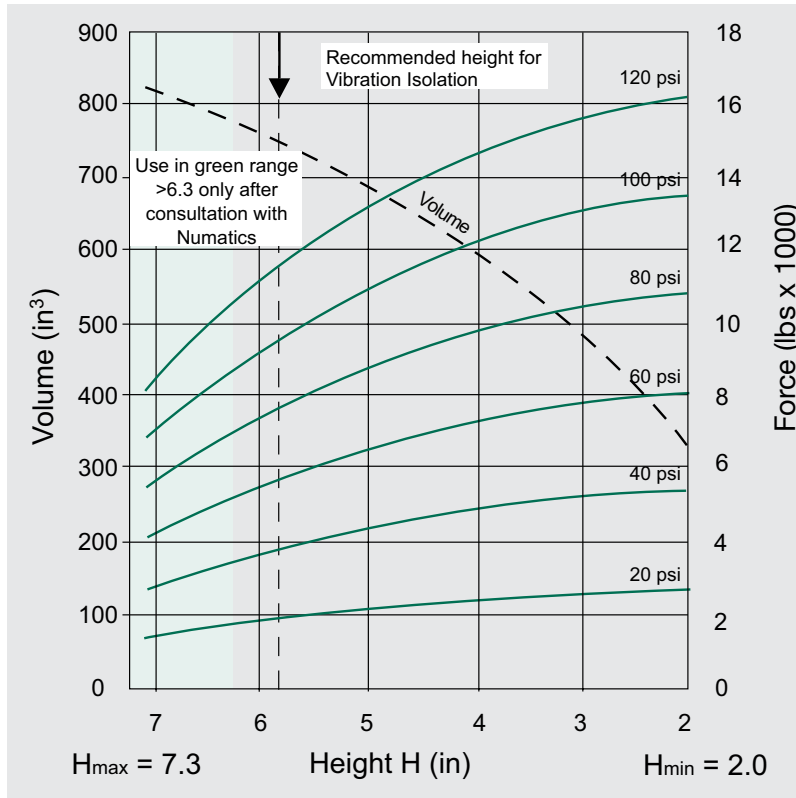
Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNS82-4-1
3.12 inch excentrical	
1/4 NPTF Air Inlet	ASNS82-4-1-2

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft

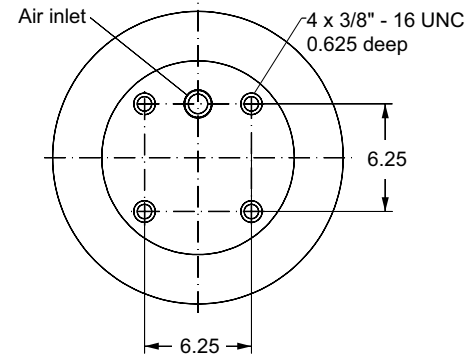
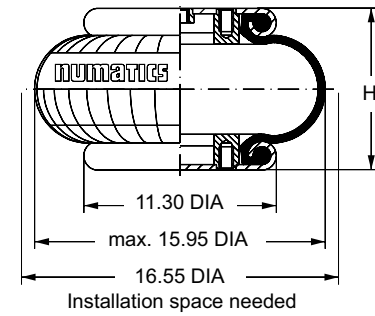


Numatics Single Convoluted Air Bellows

ASNS82-5-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	13.5 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 5.9 Inch, Minimum 4.3 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	3920	5880	7840	9800	11760	
Spring Rate (lbs/in)	1916	2604	3364	4051	4677	750
Natural Frequency (Hz)	2.2	2.1	2.1	2.0	2.0	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	6	1920	3850	5770	7690	9620	11540	758
	5	2240	4490	6730	8980	11220	13460	674
	4	2470	4940	7410	9880	12350	14820	586
	3	2610	5220	7830	10440	13050	15660	483

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNS82-5-1
3.12 inch excentrical	
1/4 NPTF Air Inlet	ASNS82-5-1-2

Additional types on request

Installation Instruction - Torque rating
 Mounting Holes - 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15lb-ft
 Air Inlet - 3/4" NPTF = 40-50 lb-ft

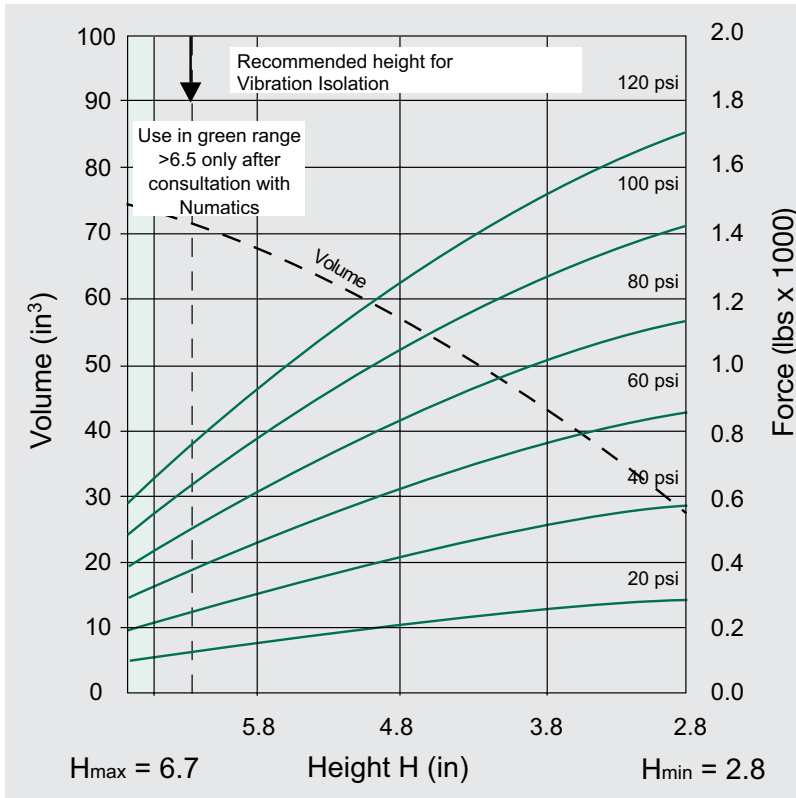


Air Bellows Series

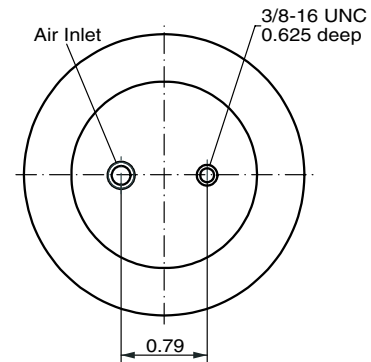
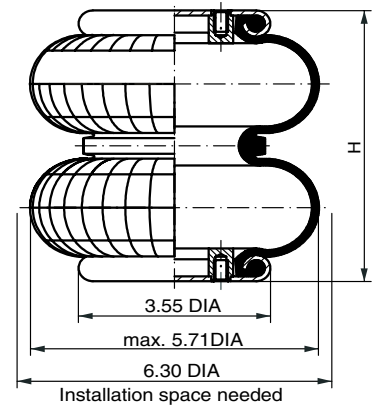
NUMATICS®

Numatics Double Convoluted Air Bellows

ASND10-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	2.5 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 6.3 Inch, Minimum 5.9 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in³)	
Force (Load) (lbs)	250	370	490	620	740		
Spring Rate (lbs/in)	178.5	265.7	265.3	464	561	69	
Natural Frequency (Hz)	2.8	2.8	2.7	2.7	2.7		

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in³)
Height H (in)	6	140	290	430	570	720	70
	5	200	400	600	800	1000	59
	4	240	490	730	980	1220	44
	3	280	560	840	1120	1400	32

ORDER DATA

Type	Model Number
With clamped plates 1/8 NPTF air inlet	ASND10-4-1

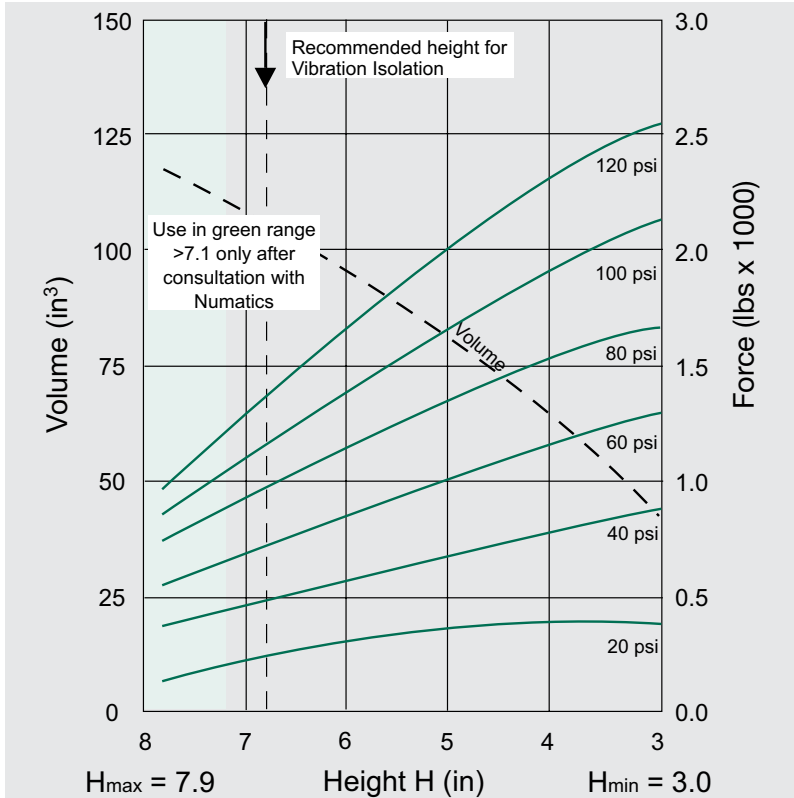
Additional types on request

Installation Instruction - Torque rating
Mounting holes - 3/8" NPTF = 15-20 lb-ft
Air Inlet - 1/8" NPTF = 12-15 lb-ft

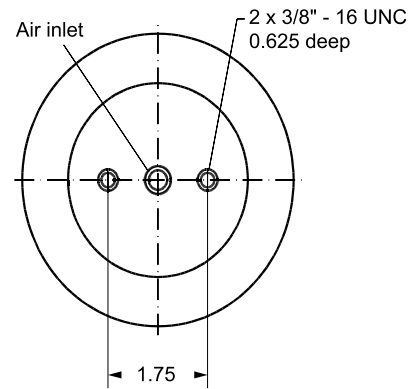
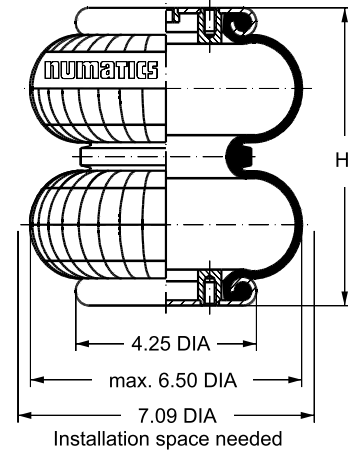


Numatics Double Convoluted Air Bellows

ASND11-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	3.3 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 6.9 Inch, Minimum 6.3 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	460	690	920	1150	1380	
Spring Rate (lbs/in)	273	396	517	630	750	107
Natural Frequency (Hz)	2.4	2.4	2.4	2.3	2.3	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	7	220	450	670	900	1120	1350	108
	6	280	560	850	1130	1410	1690	93
	5	330	670	1000	1340	1670	2010	84
	4	380	770	1150	1540	1920	2310	68
	3	420	850	1270	1690	2120	2540	38

ORDER DATA

Type	Model Number
With Clamped Plates 1/4 NPTF Air Inlet	ASND11-4-1

Additional types on request

Installation Instruction – Torque rating
Mounting Holes 3/8" = 15-20 lb-ft
Air Inlet 1/4" NPTF = 12-15 lb-ft

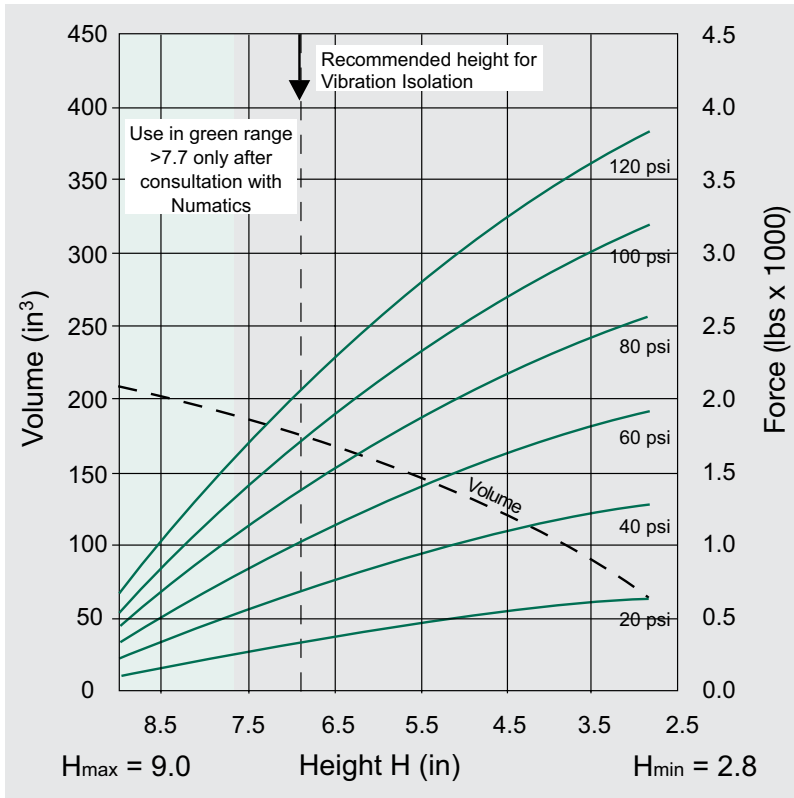


Air Bellows Series

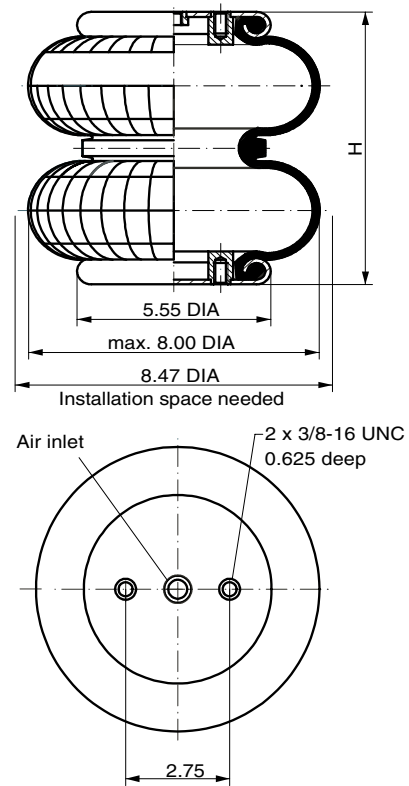
NUMATICS®

Numatics Double Convoluted Air Bellows

ASND18-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	4.8 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 6.9 Inch, Minimum 6.1 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	700	1040	1390	1740	2090	
Spring Rate (lbs/in)	354	526	699	827	989	173
Natural Frequency (Hz)	2.3	2.2	2.2	2.2	2.1	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	7	340	670	1010	1340	1680	2010	176
	6	430	850	1280	1710	2130	2560	158
	5	500	1000	1510	2010	2510	3010	133
	4	570	1150	1720	2300	2870	2440	107
	3	630	1270	1900	2530	3160	3800	70

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND18-4-1
1/4 NPTF Air Inlet	ASND18-4-1-2

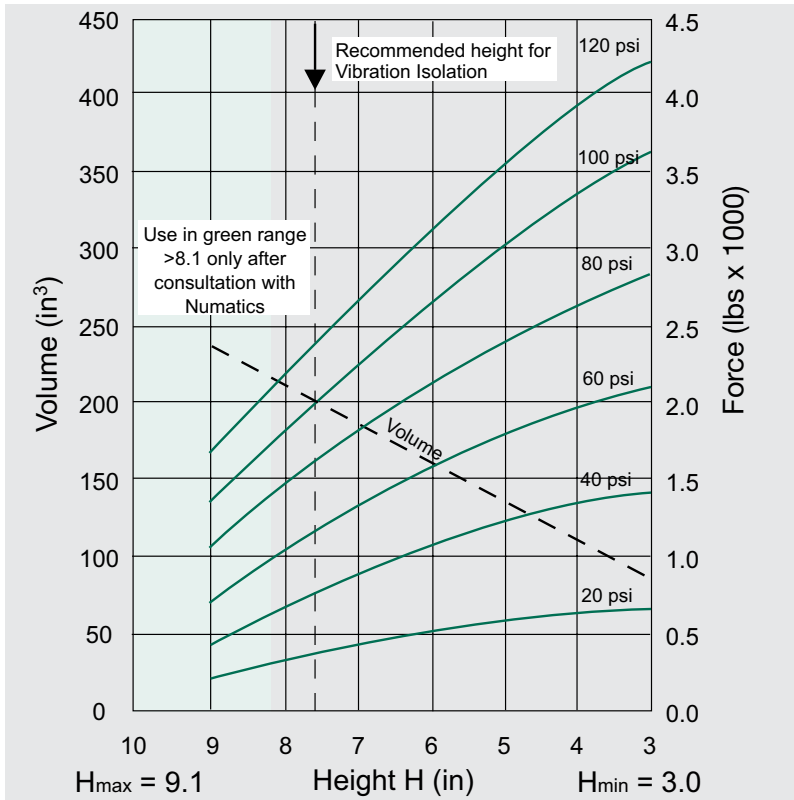
Additional types on request

Installation Instruction - Torque rating
 Mounting holes - 3/8" NPTF = 15-20 lb-ft
 Air Inlet - 3/4" NPTF = 40-50 lb-ft
 Air Inlet - 1/4" NPTF = 12-15 lb-ft

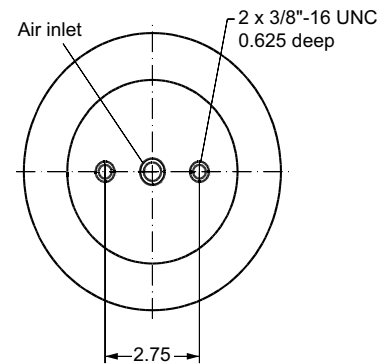
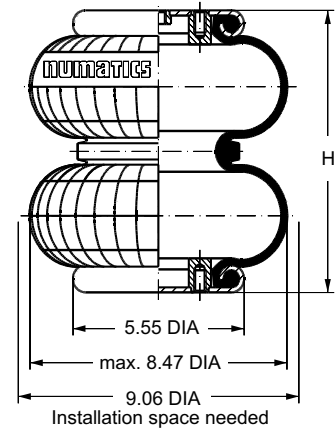


Numatics Double Convoluted Air Bellows

ASND18-5-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	5.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 7.6 Inch, Minimum 6.9 Inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	800	1200	1600	2000	2390	
Spring Rate (lbs/in)	315	490	668	855	1033	202
Natural Frequency (Hz)	2.0	2.0	2.0	2.1	2.1	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								Vol (in ³)
Pressure p (psi)	20	40	60	80	100	120		
Height H (in)	9	250	510	760	1020	1270	1530	230
	8	360	720	1090	1450	1810	2170	211
	7	450	900	1350	1800	2250	2700	186
	6	530	1050	1580	2110	2640	3160	154
	5	600	1190	1790	2390	2980	3580	141
	4	660	1320	1980	2640	3300	3960	107
	3	710	1420	2120	2830	3540	4250	82

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND18-5-1
1/4 NPTF Air Inlet	ASND18-5-1-2

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

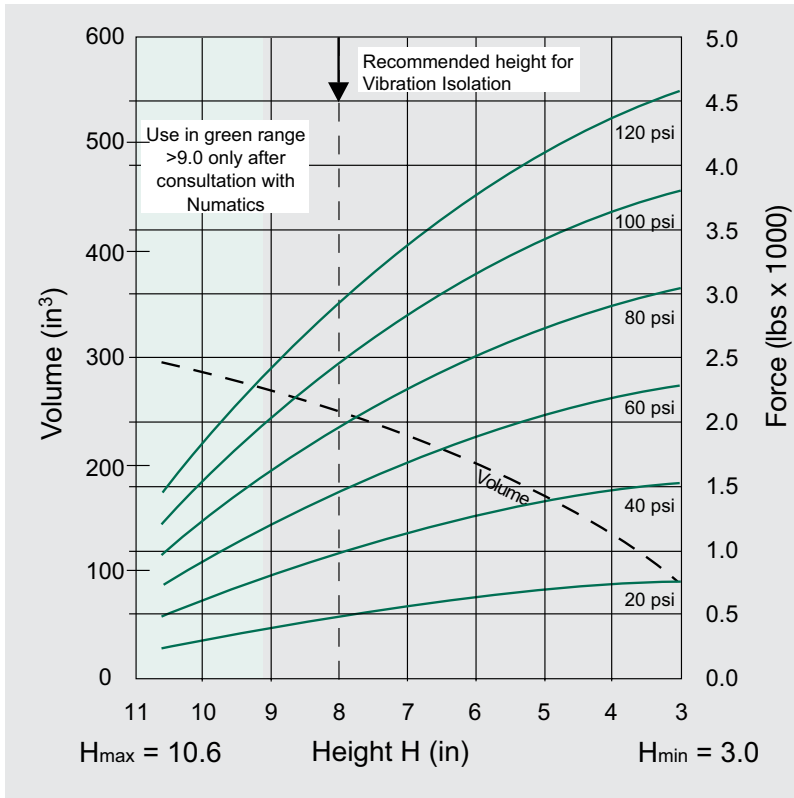


Air Bellows Series

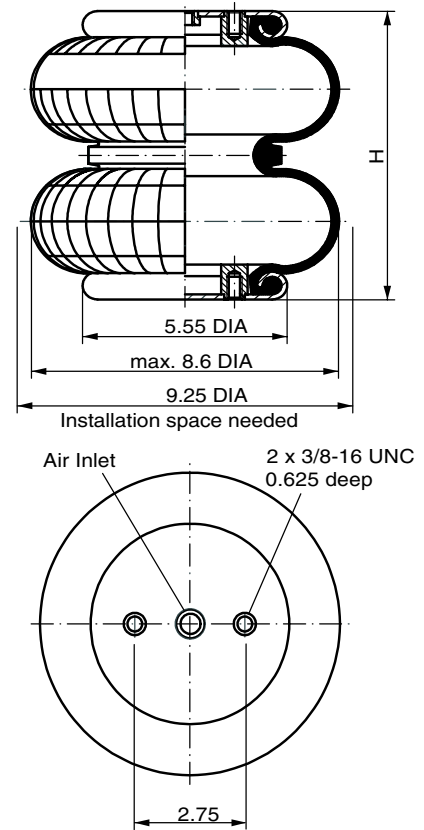
NUMATICS®

Numatics Double Convoluted Air Bellows

ASND18-6-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	5.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 8.0 Inch, Minimum 7.5 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	970	1450	1940	2420	2910	
Spring Rate (lbs/in)	341	496	649	782	910	250
Natural Frequency (Hz)	1.8	1.8	1.8	1.8	1.8	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	9	400	800	1200	1600	2000	2400	270
	8	480	970	1450	1940	2420	2910	250
	7	560	1120	1680	2230	2790	3350	228
	6	630	1260	1890	2530	3160	3790	197
	5	690	1380	2070	2760	3450	4140	166
	4	730	1460	2200	2930	3660	4390	135

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4" NPTF Air Inlet	ASND18-6-1
1/4" NPTF Air Inlet	ASND18-6-1-2

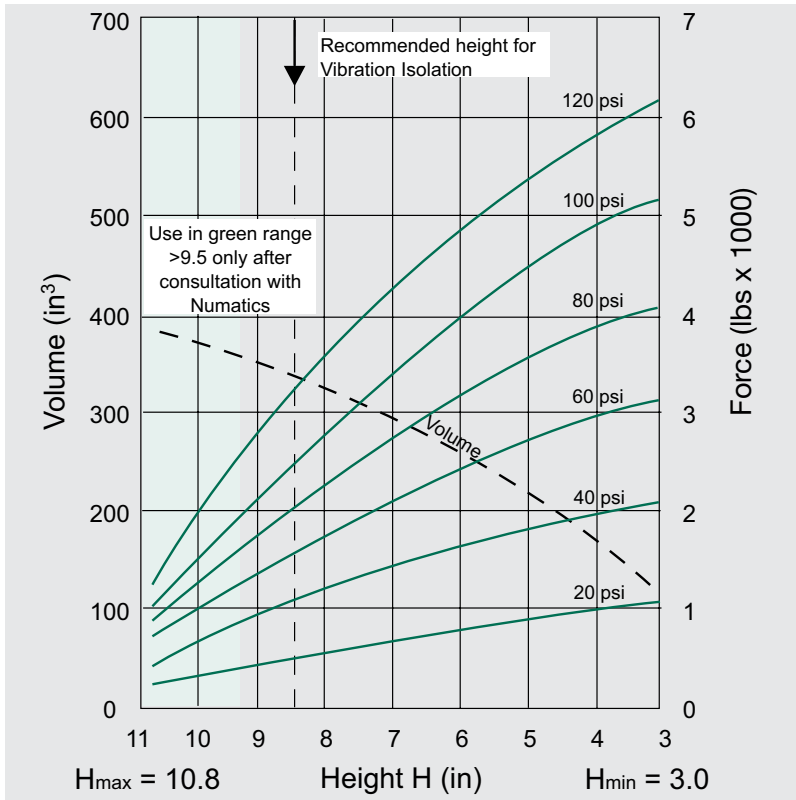
Additional types on request

Installation Instructions - Torque rating
 Mounting holes - 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft
 Air Inlet - 3/4" NPTF = 40-50 lb-ft

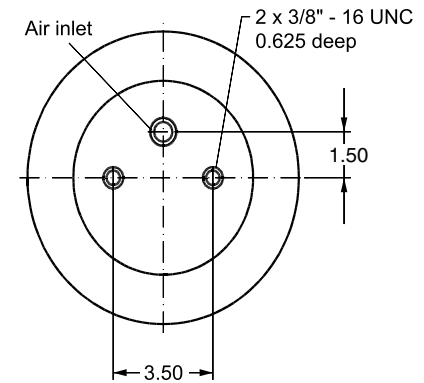
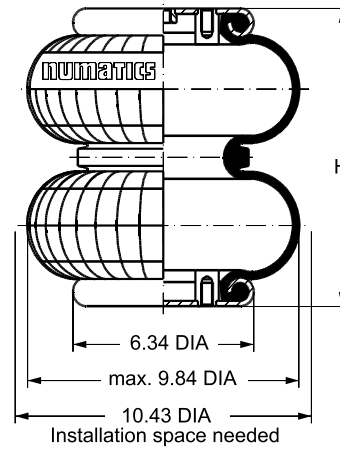


Numatics Double Convoluted Air Bellows

ASND31-6-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	7 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 8.5 Inch, Minimum 7.7 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	1040	1560	2080	2600	3120	
Spring Rate (lbs/in)	417	608	797	976	1163	333
Natural Frequency (Hz)	2.0	2.0	1.9	1.9	1.9	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	9	450	910	1360	1820	2270	2730	352
	8	580	1160	1740	2320	2900	3480	325
	7	690	1380	2070	2770	3460	4150	290
	6	790	1590	2380	3180	3970	4760	256
	5	880	1760	2640	3530	4410	5290	214
	4	960	1930	2890	3850	4820	5780	168
	3	1020	2040	3060	4080	5100	6120	119

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND31-6-1
1.5 inch excentrical	
1/4 NPTF Air Inlet	ASND31-6-1-2

Additional types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

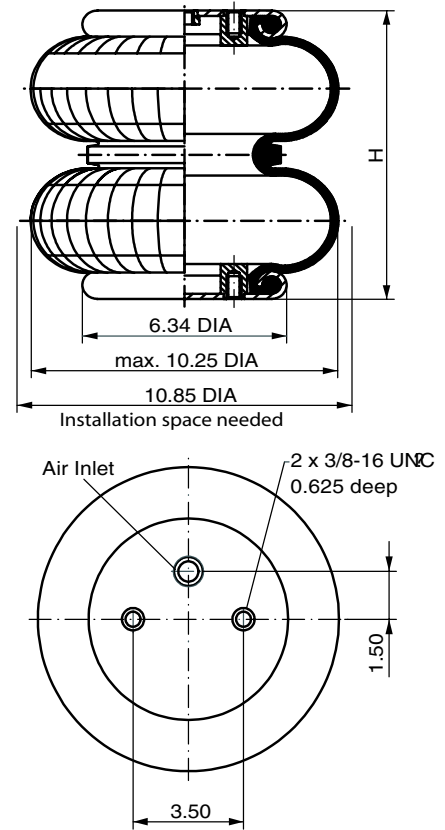
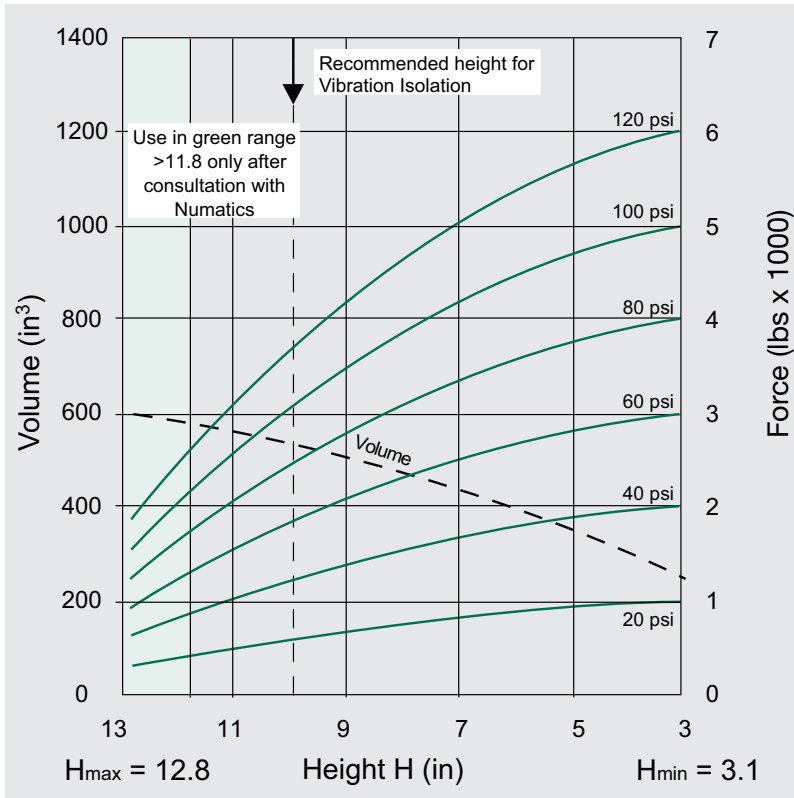


Air Bellows Series

NUMATICS®

Numatics Double Convoluted Air Bellows

ASND31-8-1



Force-Height Diagram

TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	7.7 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 10.0 Inch, Minimum 9.06 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	1220	1830	2440	3050	3660		
Spring Rate (lbs/in)	383	549	756	934	1087	538	
Natural Frequency (Hz)	1.8	1.8	1.7	1.7	1.7		

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	11	510	1020	1530	2030	2540	3050
	10	610	1220	1830	2440	3050	3660
	9	700	1400	2100	2800	3500	4200
	8	770	1530	2300	3070	3830	4600
	7	840	1670	2510	3340	4180	5010
	6	890	1780	2670	3560	4440	5330
	5	930	1870	2800	3740	4670	5610

ORDER DATA

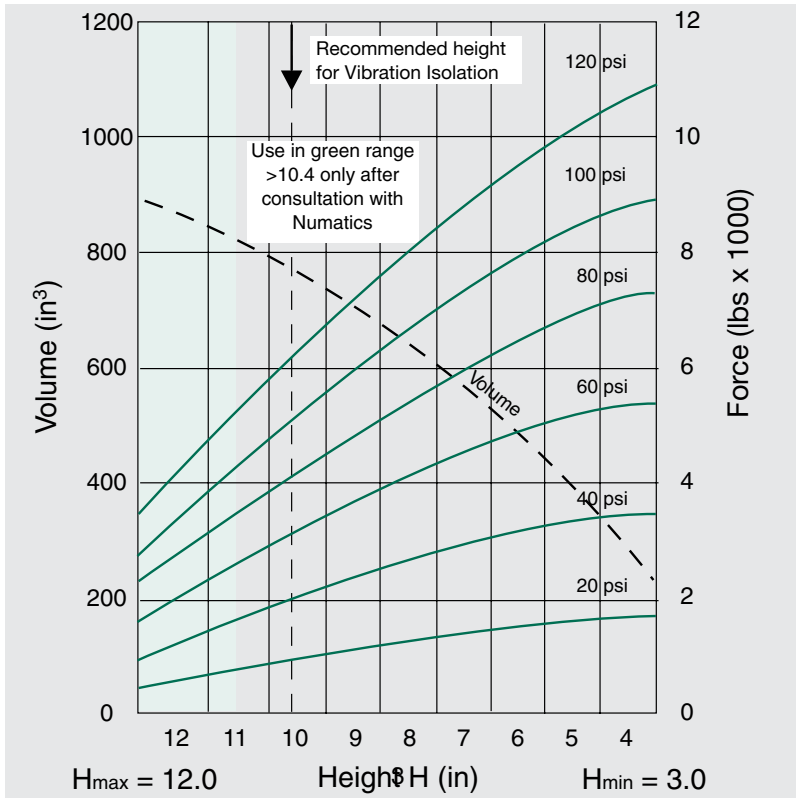
Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND31-8-1
1/4 NPTF Air Inlet	ASND31-8-1-2
Additional types on request	

Installation Instructions - Torque rating
 Mounting holes - 3/8" = 15-20lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

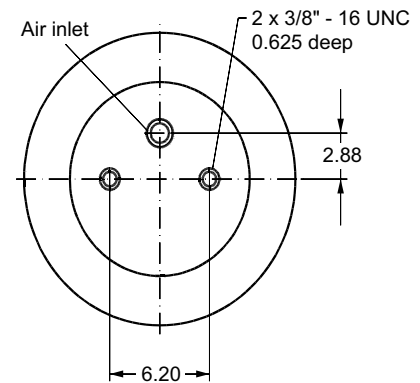
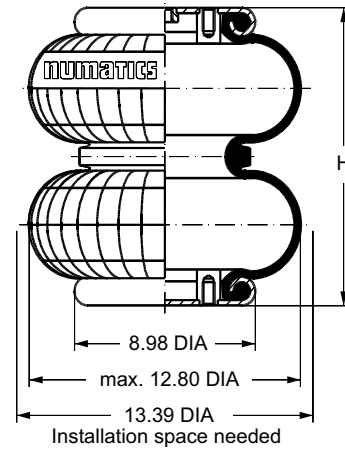


Numatics Double Convoluted Air Bellows

ASND51-7-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	10.6 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 9.5 Inch, Minimum 8.7 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	2100	3150	4200	5250	6300	
Spring Rate (lbs/in)	835	1122	1392	1592	1854	766
Natural Frequency (Hz)	2.0	1.9	1.8	1.7	1.7	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	10	1010	2020	3030	4030	5040	6050	793
	8	1280	2560	3840	5120	6400	7680	669
	6	1550	3100	4650	6200	7750	9300	518
	5	1650	3310	4960	6610	8270	9920	433
	4	1750	3500	5250	6990	8740	10,490	340
	3	1820	3630	5450	7270	9080	10,900	247

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND51-7-1
2.88 inch excentrical	
1/4 NPTF Air Inlet	ASND51-7-1-2

Additional types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

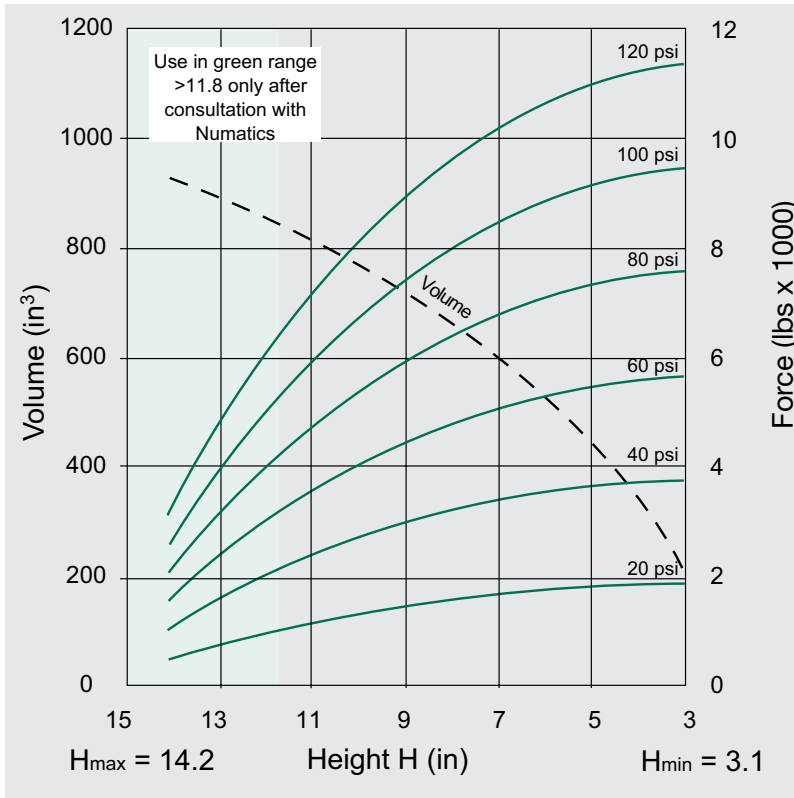


Air Bellows Series

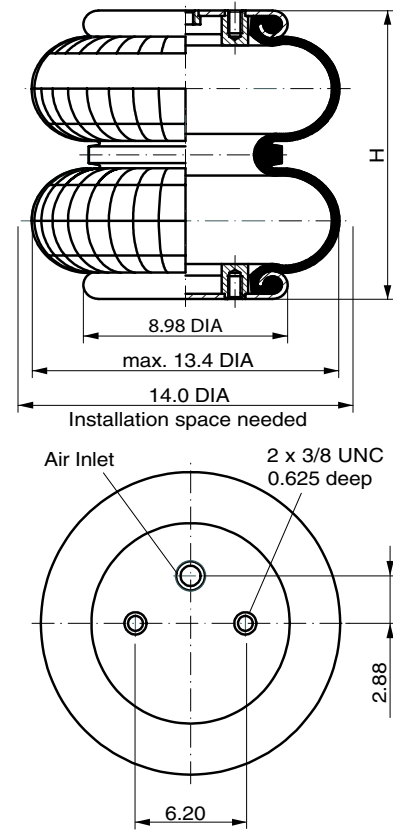
NUMATICS®

Numatics Double Convoluted Air Bellows

ASND51-8-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	11.7 lbs

Pneumatic Application – Static Characteristic Values

Force F (lbs)	Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	11	1190	2380	3580	4770	5960	7150	823
	9	1480	2960	4440	5920	7400	8890	726
	7	1690	3380	5070	6770	8460	10150	595
	5	1840	3670	5510	7340	9180	11020	431

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND51-8-1
1/4 NPTF Air Inlet	ASND51-8-1-2
2.88 inch excentrical	

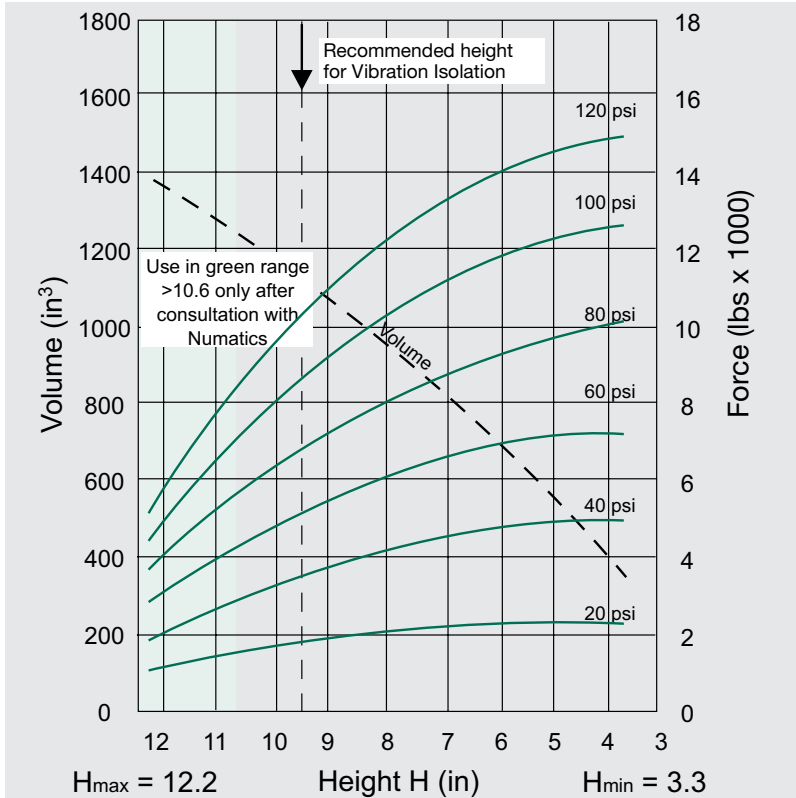
Additional types on request

Installation Instruction - Torque rating
 Mounting holes - 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

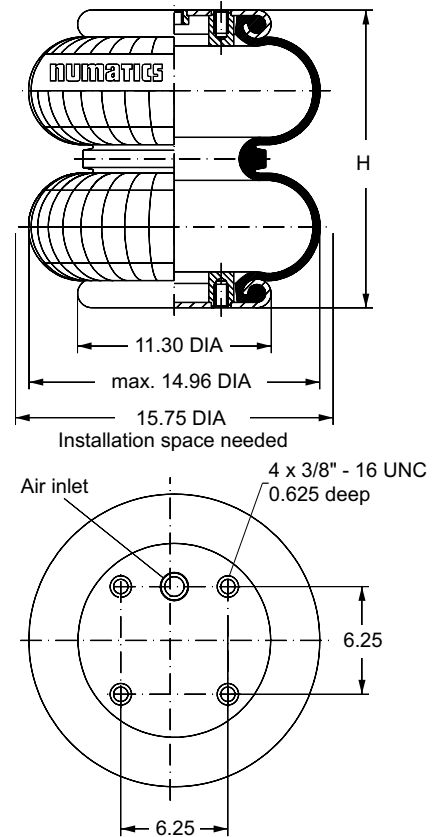


Numatics Double Convoluted Air Bellows

ASND82-7-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 67 lbs
Overall Weight with Clamped Plates	15.4 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 9.8 Inch, Minimum 8.9 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	3270	4900	6530	8170	9800	
Spring Rate (lbs/in)	1168	1689	2201	2680	3189	1132
Natural Frequency (Hz)	1.9	1.8	1.8	1.8	1.8	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	10	1580	3160	4740	6320	7900	9480	1159
	9	1830	3650	5480	7310	9140	10,960	1041
	8	2030	4050	6080	8100	10,130	12,150	930
	7	2200	4410	6610	8820	11,020	13,220	819
	6	2340	4680	7020	9370	11,710	14,050	697
	5	2430	4870	7300	9370	12,170	14,600	561
	4	2500	5000	7500	10,000	12,500	15,000	434

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND82-7-1
3.12 inch excentrical	
1/4 NPTF Air Inlet	ASND82-7-1-2

Additional types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft

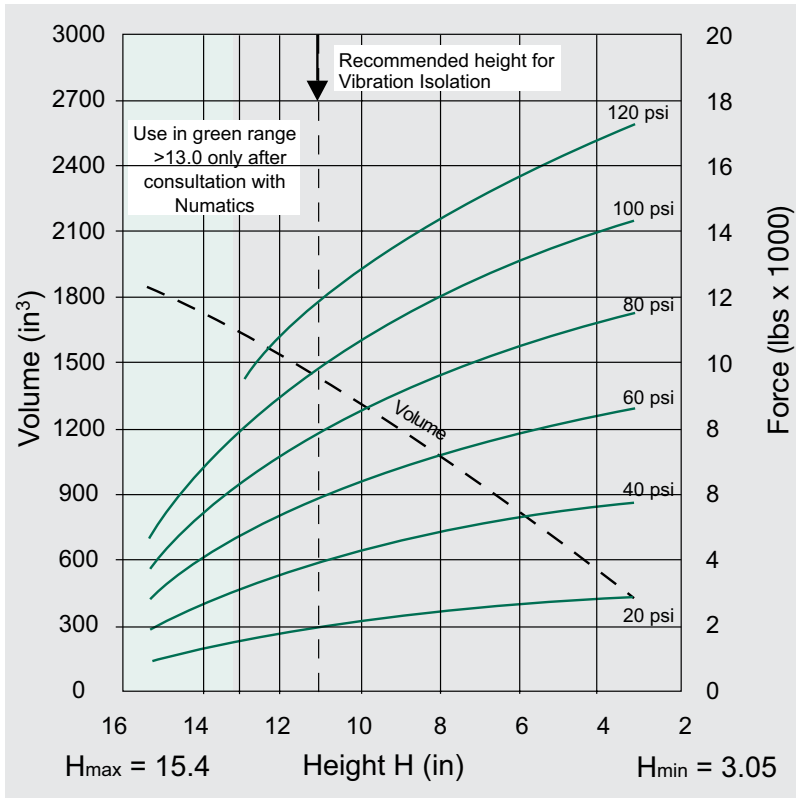


Air Bellows Series

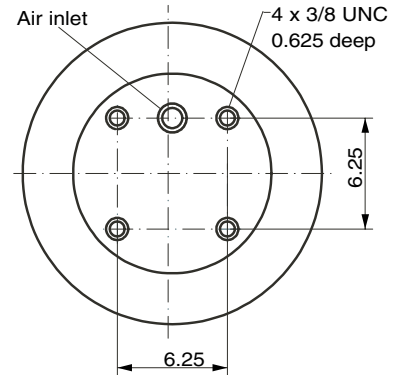
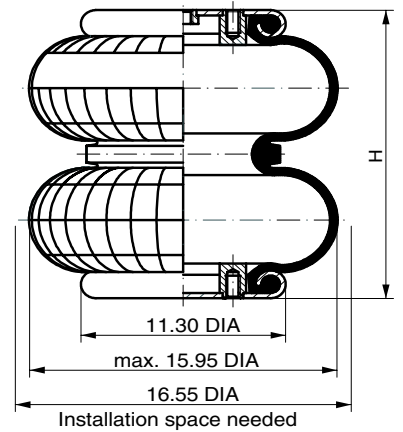
NUMATICS®

Numatics Double Convoluted Air Bellows

ASND82-10-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 90 lbs
Overall Weight with Clamped Plates	17.1 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 11.0 Inch, Minimum 10.2 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	3960	5950	7930	9910	11890	
Spring Rate (lbs/in)	929	1329	1701	2047	2421	1410
Natural Frequency (Hz)	1.5	1.5	1.5	1.4	1.4	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	13	1580	3170	4750	6340	7920	9510	1628
	11	1980	3960	5950	7930	9910	11890	1411
	9	2270	4550	6820	9090	11370	13640	1199
	7	2500	5010	7510	10020	12520	15020	952
	5	2690	5370	8060	10750	13430	16120	694

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASND82-10-1
1/4 NPTF Air Inlet	ASND82-10-1-2

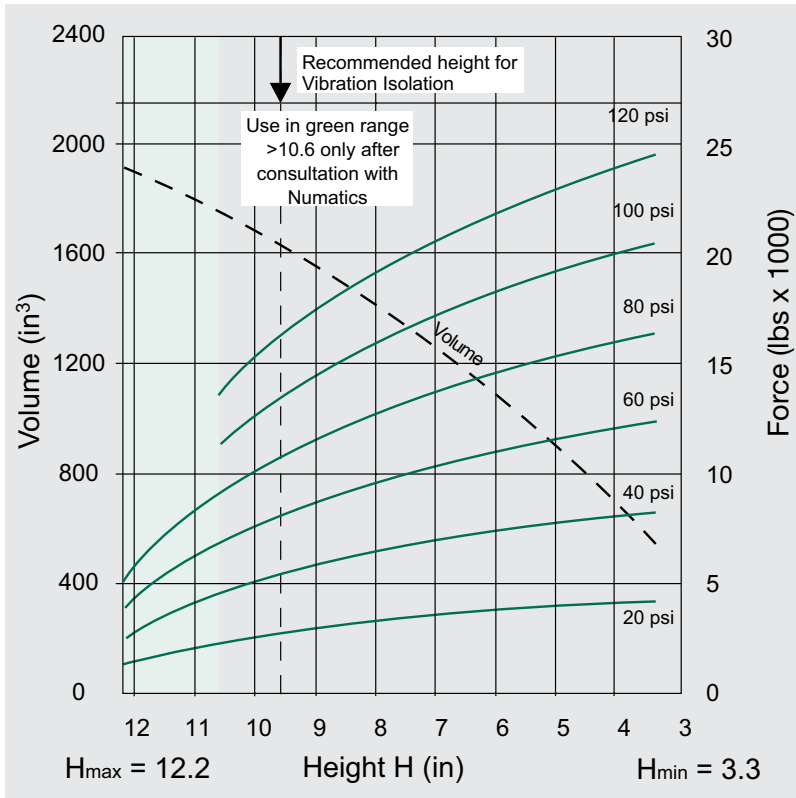
Additional types on request

Installation Instructions - Torque rating
 Mounting holes - 3/8" = 15-20 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft

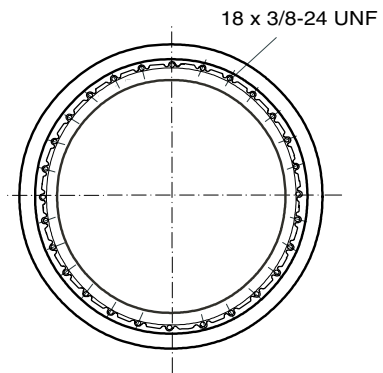
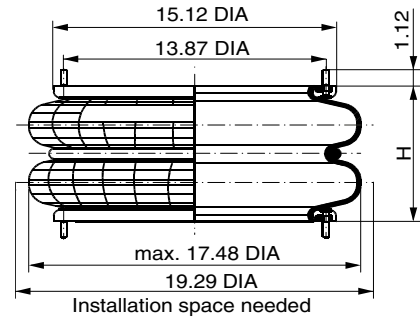


Numatics Double Convoluted Air Bellows

ASND154-8-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 45 lbs
Overall Weight with Clamped Plates	19 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 9.5 Inch, Minimum 8.7 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	5450	8180	10900	13630	16350	
Spring Rate (lbs/in)	1638	2303	3005	3633	4317	1655
Natural Frequency (Hz)	1.7	1.7	1.6	1.6	1.6	

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	10	2520	5040	7560	10080	12600	15130
	9	2890	5790	8680	11580	14470	17370
	8	3190	6380	9560	12750	15940	19130
	7	3420	6840	10260	13680	17100	20520
	6	3630	7260	10890	14510	18140	21770
	5	3800	7610	11410	15220	19020	22830
	4	3990	7980	11970	15960	19950	23940

ORDER DATA

Type	Model Number
Bellow with bead rings, 1 7/8 bolts, nuts and washers	ASND154-8-1

Additional types on request

Installation Instruction - Torque rating
Mounting holes - 3/8" = 28-32 lb-ft

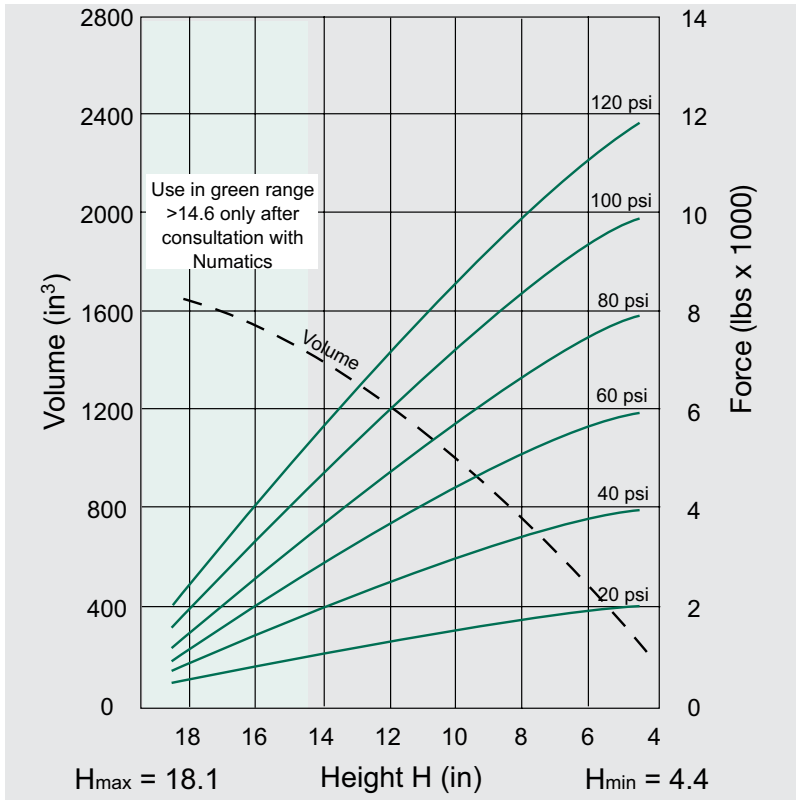


Air Bellows Series

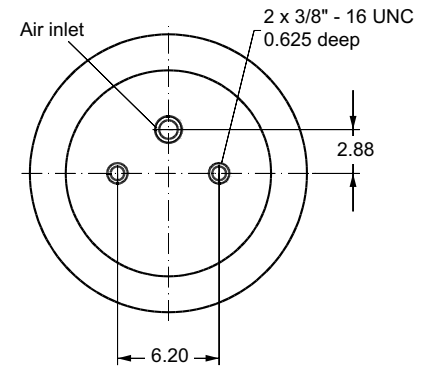
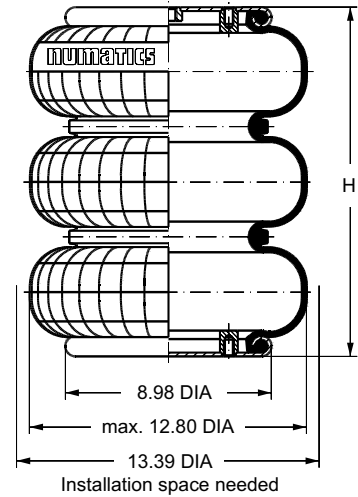
NUMATICS®

Numatics Triple Convoluted Air Bellows

ASNT51-11-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 90 lbs
Overall Weight with Clamped Plates	18.4 lbs

Pneumatic Application – Static Characteristic Values

Force F (lbs)	Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	14	920	1840	2760	3680	4600	5520	1390
	12	1190	2380	3570	4760	5950	7140	1227
	10	1430	2860	4300	5730	7160	8590	1023
	8	1640	3270	4910	6540	8180	9820	782
	6	1830	3670	5500	7330	9170	11,000	504

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNT51-11-1
2.88 inch excentrical	
1/4 NPTF Air Inlet	ASNT51-11-1-2

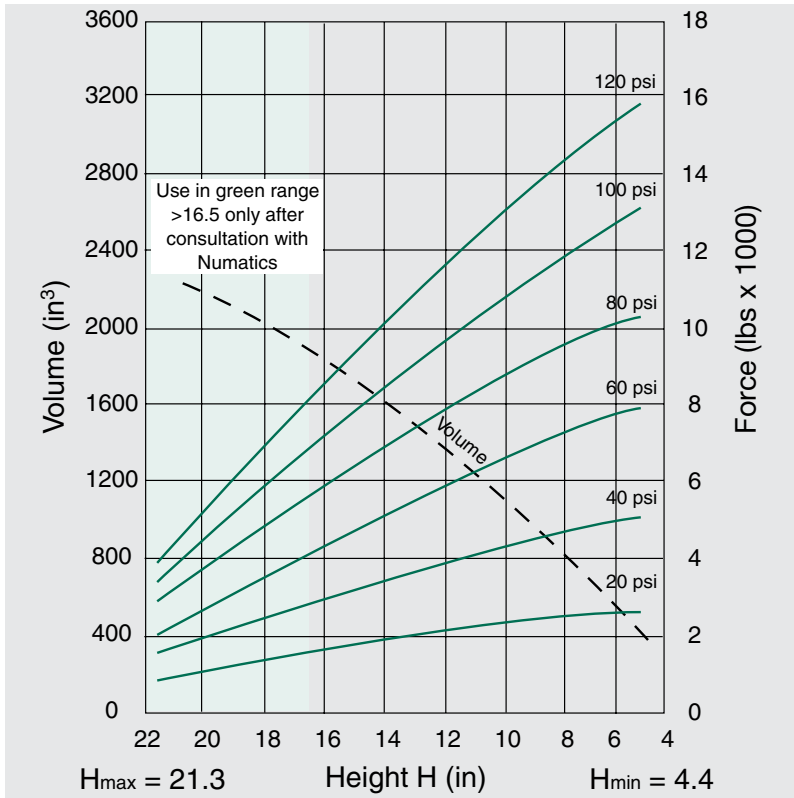
Additional types on request

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft

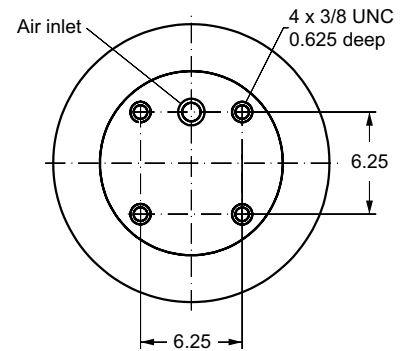
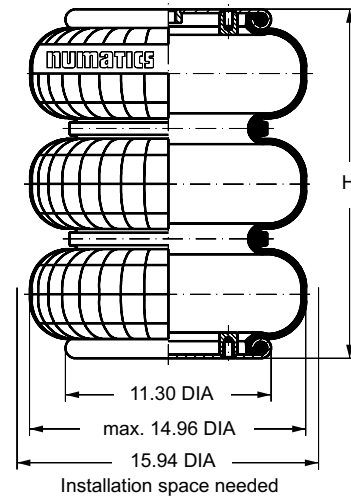


Numatics Triple Convoluted Air Bellows

ASNT82-12-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 90 lbs
Overall Weight with Clamped Plates	21 lbs

Pneumatic Application – Static Characteristic Values

Force F (lbs)	Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
1803	16	1450	2900	4360	5810	7260	8710	1803
1588	14	1720	3450	5170	6900	8620	10,350	1588
1354	12	1970	3940	5910	7890	9860	11,830	1354
1140	10	2170	4350	6520	8700	10,870	13,050	1140
887	8	2370	4740	7120	9490	11,860	14,230	887
610	6	2520	5030	7550	10,060	12,580	15,100	610

ORDER DATA

Type	Model Number
With Clamped Plates	
3/4 NPTF Air Inlet	ASNT82-12-1
3.12 inch excentral	
1/4 NPTF Air Inlet	ASNT82-12-1-2

Installation Instruction – Torque rating
 Mounting Holes 3/8" = 15-20 lb-ft
 Air Inlet 1/4" NPTF = 12-15 lb-ft
 Air Inlet 3/4" NPTF = 40-50 lb-ft

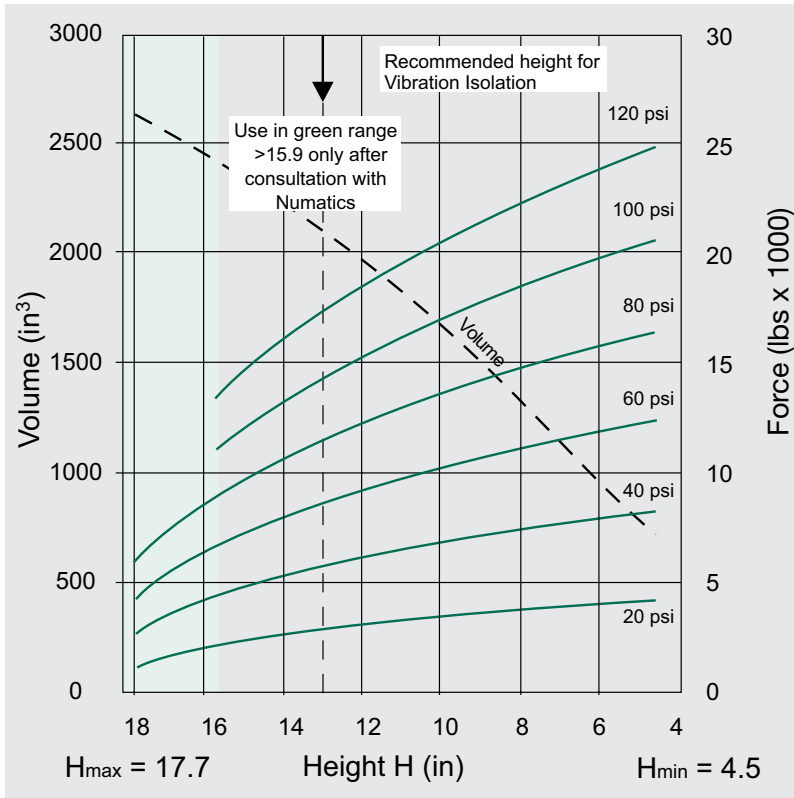


Air Bellows Series

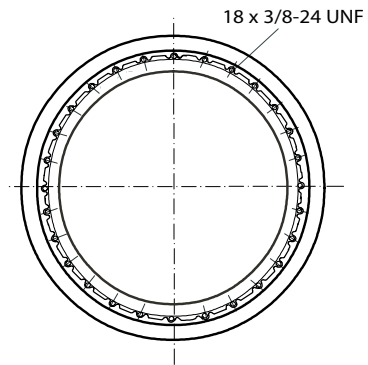
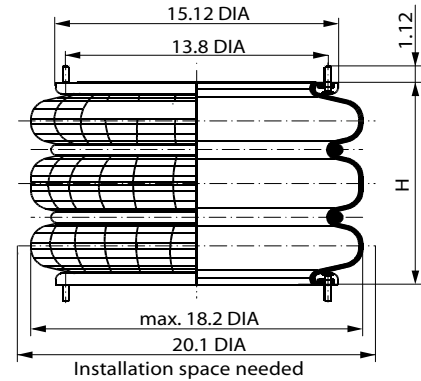
NUMATICS®

Numatics Triple Convoluted Air Bellows

ASNT154-12-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 135 lbs
Overall Weight with Clamped Plates	21 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 13 Inch, Minimum 12.4 Inch							
Pressure p (psi)	40	60	80	100	120	Vol (in ³)	
Force (Load) (lbs)	5770	8650	11530	14420	17300		
Spring Rate (lbs/in)	1144	1659	2079	2610	3029	2125	
Natural Frequency (Hz)	1.4	1.3	1.3	1.3	1.3		

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	15	2420	4830	7250	9670	12080	14500
	13	2880	5770	8650	11530	14420	17300
	11	3270	6530	9800	13070	16330	19600
	9	3560	7130	10690	14250	17820	21380
	7	3830	7650	11480	15300	19130	22950

ORDER DATA

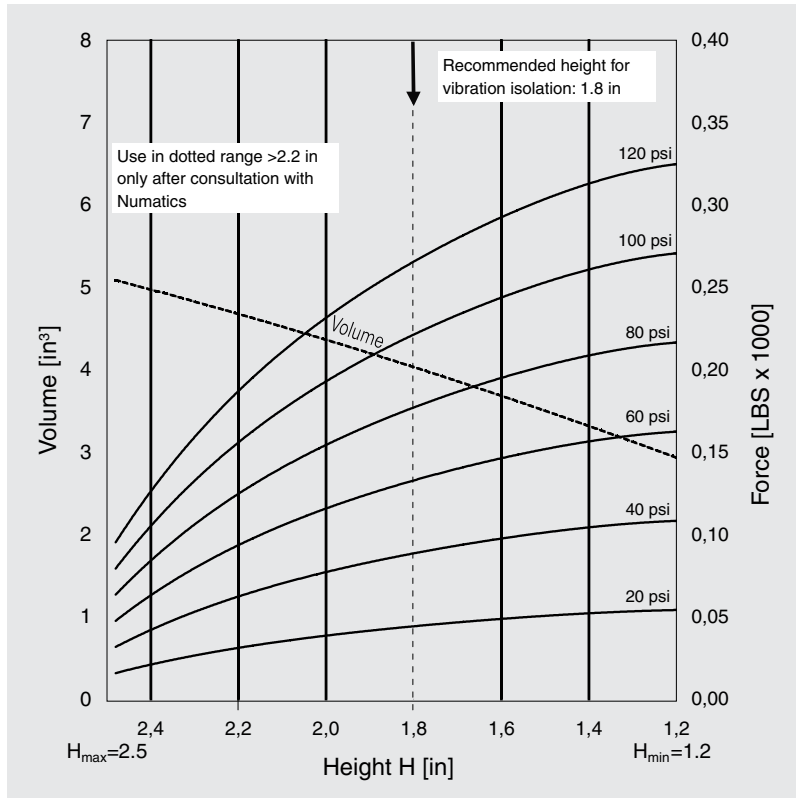
Type	Model Number
Bellows with bead rings, 1 7/8 bolts, nuts and washers	ASNT154-12-1

Installation Instructions - torque rating
Mounting holes - 3/8" = 28-32 lb-ft

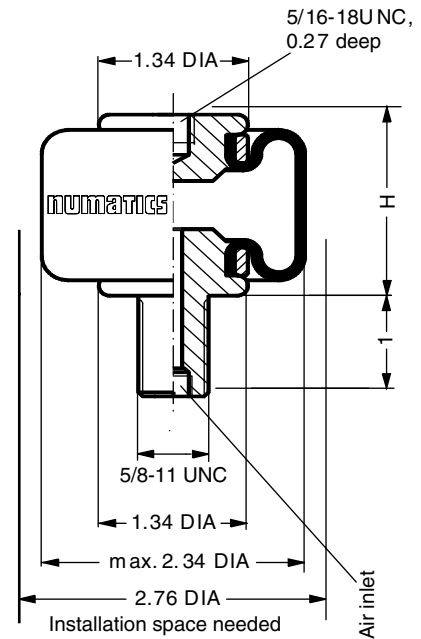


Numatics Sleeve Type Air Spring

ASNC2-1-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 5 lbs
Overall Weight with Clamped Plates	0.5 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 1.8 Inch, Minimum 1.4 inch

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	88	132	176	220	264	
Spring Rate (lbs/in)	110	154	195	231	272	4.0
Natural Frequency (Hz)	3.5	3.4	3.3	3.2	3.2	

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	2.2	31	62	92	123	154	4.7
	1.8	44	88	132	176	220	4.0
	1.4	52	104	156	208	260	3.3

ORDER DATA

Type	Model Number
With 1/8 NPTF Air Inlet	ASNC2-1-1

Additional types on request.

Installation Instruction –
 5/16-18 UNC = 2-4 LBxFT
 5/8-11 UNC = 8-10 LBxFT
 1/8 NPTF = Handtight plus one turn.

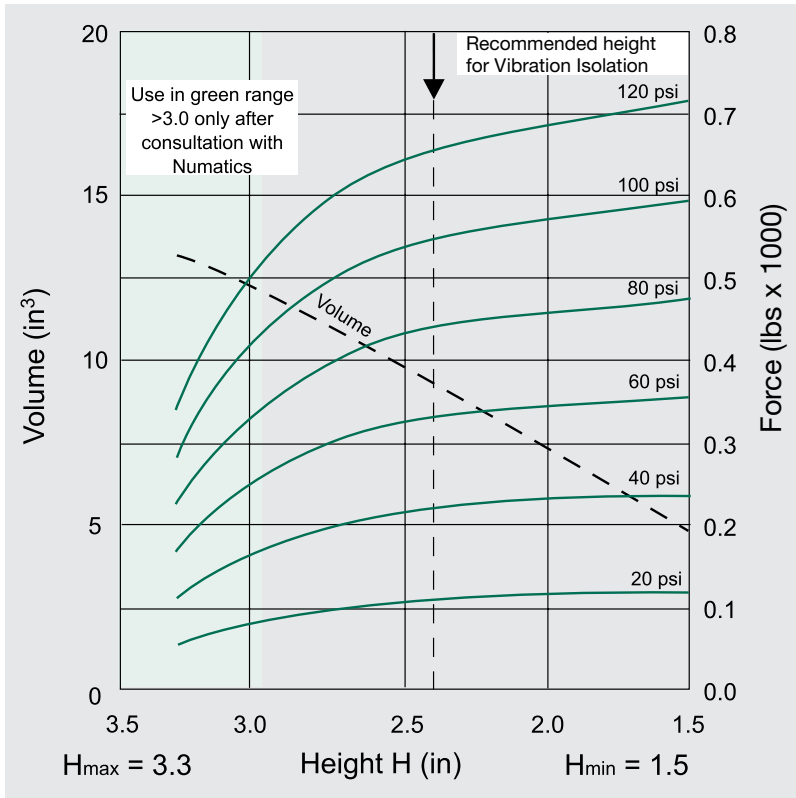


Air Bellows Series

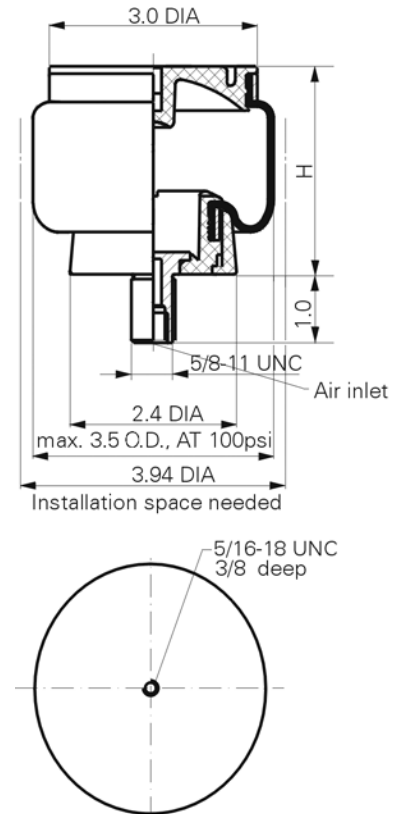
NUMATICS®

Numatics Sleeve Type Air Bellows

ASNC6-1-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 34 lbs
Overall Weight with Clamped Plates	0.7 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 2.4 Inch						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	220	330	440	550	660	
Spring Rate (lbs/in)	171	242	315	377	443	9
Natural Frequency (Hz)	2.7	2.7	2.7	2.6	2.6	

Pneumatic Application – Static Characteristic Values

Force F (lbs)							
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	3	90	170	260	340	430	12
	2.5	110	210	320	430	530	10
	2	110	230	340	460	570	7

ORDER DATA

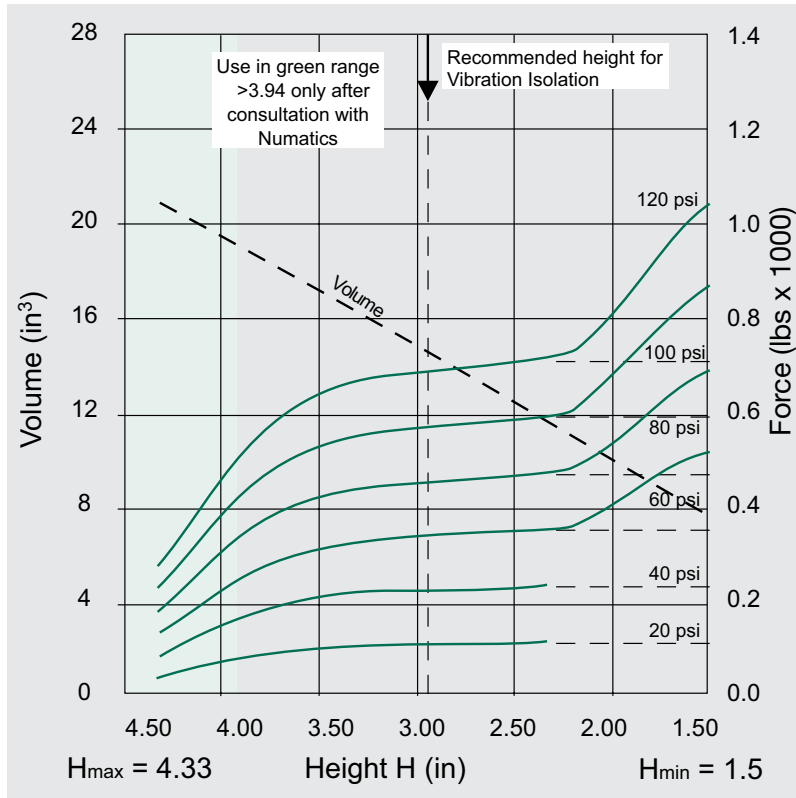
Type	Model Number
With 1/8" NPTF Air Inlet - Brass Stud	ASNC6-1-1

Installation Instruction – Torque rating
 Mounting Stud 5/16" = 2-4 lb x ft
 5/8" - 11 UNC = 8-10 lb x ft
 Air Inlet 1/8" NPTF = Handtight plus one turn

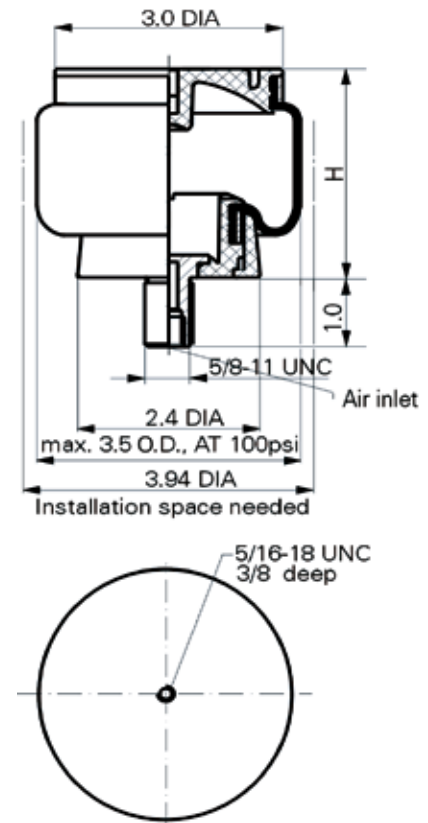


Numatics Sleeve Type Air Bellows

ASNC6-2-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	0 PSI
Return Force to Min. Height	≤ 34 lbs
Overall Weight with Clamped Plates	0.66 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 2.95 Inch, lateral guidance necessary

Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	230	340	460	570	690	
Spring Rate (lbs/in)	159	221	272	310	363	15
Natural Frequency (Hz)	2.7	2.5	2.4	2.3	2.3	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	3.5	100	210	310	420	520	630	17.2
	3	110	230	340	460	570	80	14.9
	2.5	120	240	360	470	590	710	12.5

ORDER DATA

Type	Model Number
With 1/8 NPTF Air Inlet - Brass Stud	ASNC6-2-1

Additional types on request.

Installation Instruction –
 5/16-18 UNC = 2-4 lb-ft
 5/8-11 UNC = 8-10 lb-ft
 1/8 NPTF = Handtight plus one turn

Note:

The dotted lines on the static load curves shows the force of the ASNC6-2-1 with an additional 0.6inch. pedestal under the piston. This pedestal is NOT provided by Numatics. If this pedestal is not used, then the bellow will contact the ground at a height of approx. 2.2inch. This should be avoided because it could cause wear at the bellow. Minimum pressure for service without pedestal is 45psi.

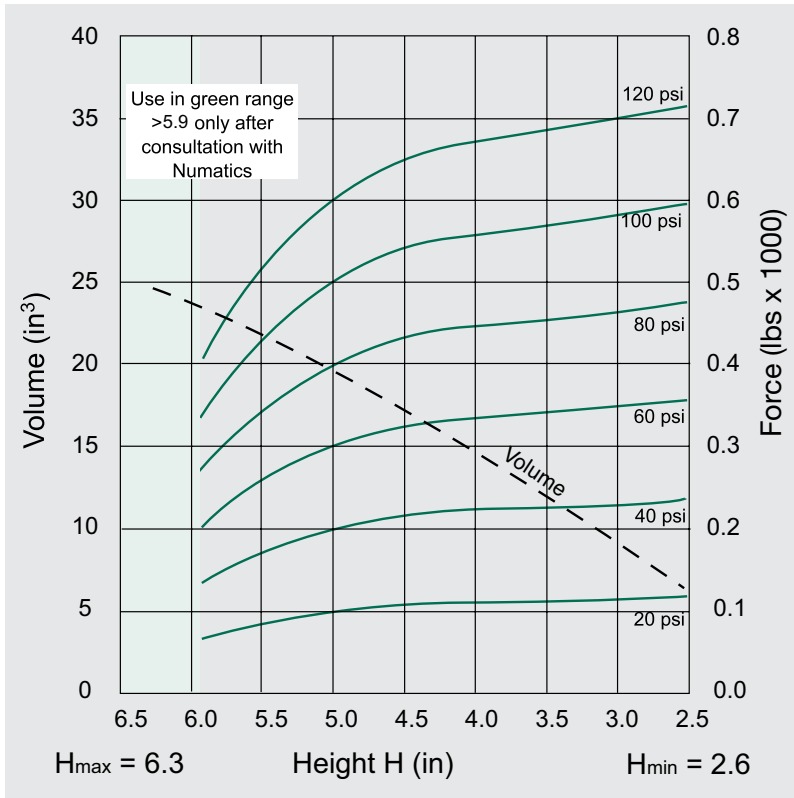


Air Bellows Series

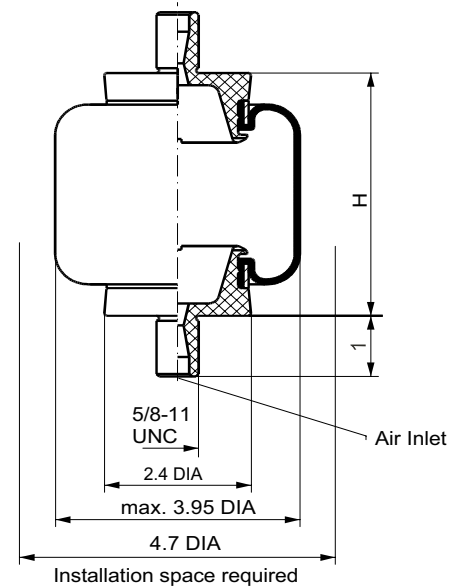
NUMATICS®

Numatics Sleeve Type Air Bellows

ASNC6-3-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	5 PSI
Return Force to Min. Height	≤ 34 lbs
Overall Weight with Clamped Plates	0.9 lbs

Pneumatic Application – Static Characteristic Values

Force F (lbs)	Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)
Height H (in)	3	130	270	400	540	670	800	10
	3.5	130	260	400	530	660	790	13
	4	130	260	390	520	650	780	16
	4.5	120	240	360	480	500	720	19
	5	100	210	310	420	520	630	23
	5.5	80	160	240	320	400	480	25

ORDER DATA

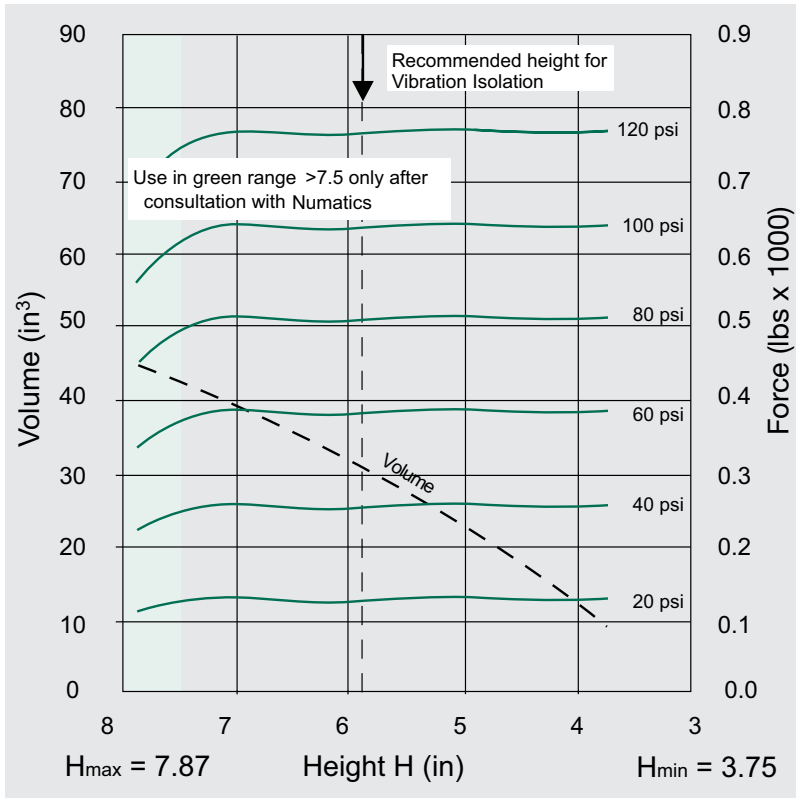
Type	Model Number
With 1/8" NPTF Air Inlet - Brass Stud at both ends	ASNC6-3-1

Installation Instruction
 5/8-11 UNC = 8-10 lb-ft
 1/8 NPTF = Handtight plus one turn

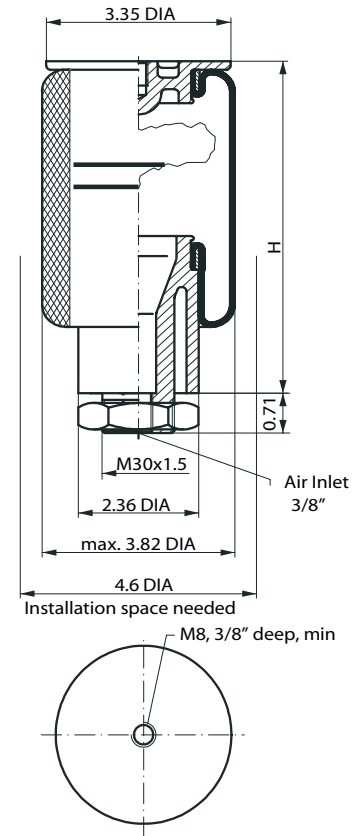


Numatics Sleeve Type Air Bellows

ASNC8-4-1



Force-Height Diagram



TECHNICAL DATA

Min. Pressure	13.05 PSI
Return Force to Min. Height	≤ 101 lbs
Overall Weight with Clamped Plates	1.15 lbs

Vibration Isolation – Dynamic Characteristic Values

Design Height H: Recommended 5.9 Inch, lateral guidance necessary						
Pressure p (psi)	40	60	80	100	120	Vol (in ³)
Force (Load) (lbs)	260	380	510	640	770	
Spring Rate (lbs/in)	97	142	186	228	272	31
Natural Frequency (Hz)	2.0	1.9	1.9	1.9	1.9	

Pneumatic Application – Static Characteristic Values

Force F (lbs)								
Pressure p (psi)	20	40	60	80	100	120	Vol (in ³)	
Height H (in)	7	130	260	380	510	640	770	39
	6	130	260	380	510	640	770	32
	5	130	260	380	510	640	770	25
	4	130	260	380	510	640	770	18

ORDER DATA

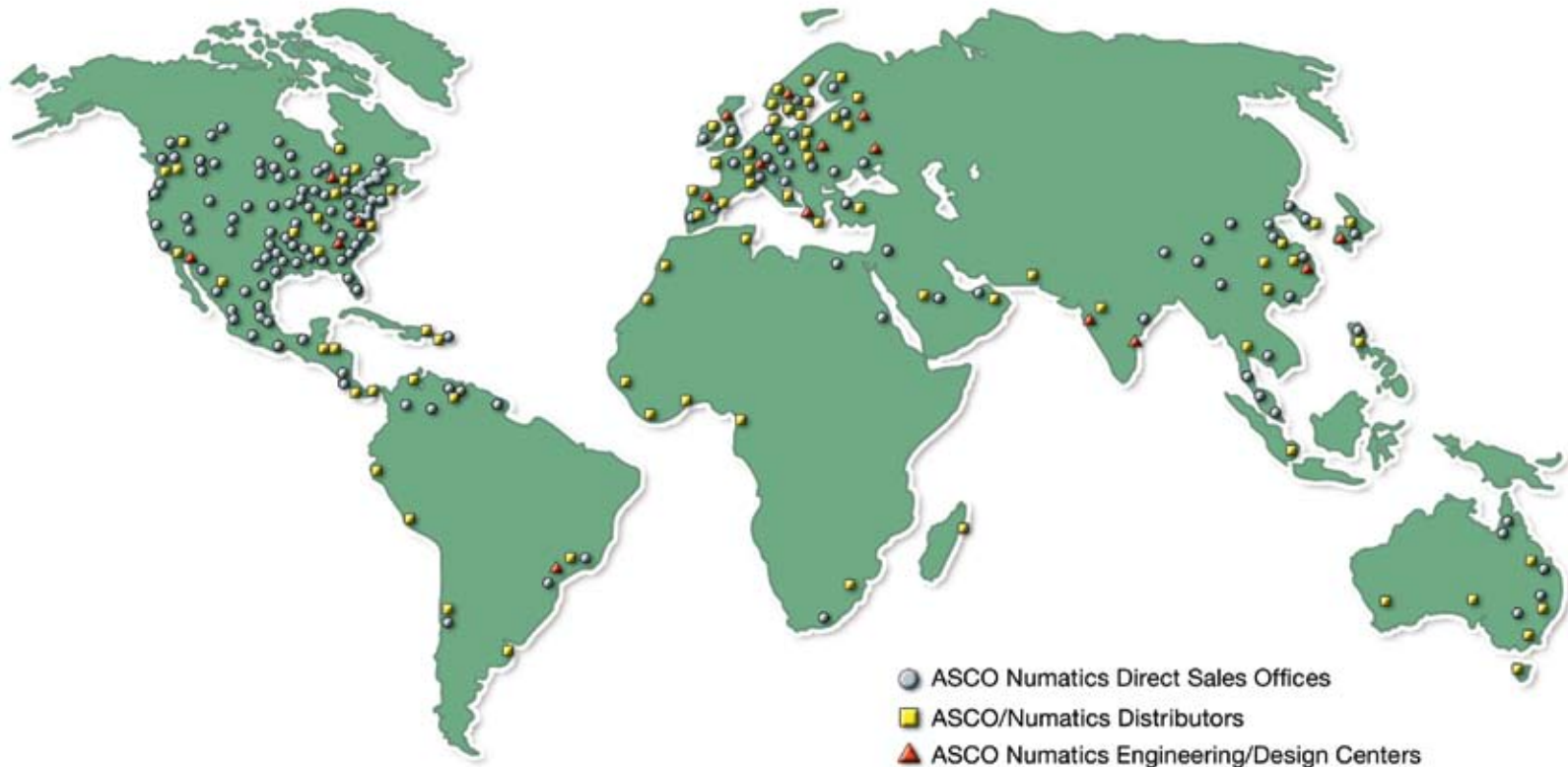
Type	Model Number
With 3/8" air inlet	ASNC8-4-1

Additional types on request

Installation Instruction
M8 = 4 LBxFT
M30x1.5 = 28 LBxFT
G 3/8 = 7 LBxFT

NUMATICS

*World Class Supplier
of Pneumatic Components*



WORLD HEADQUARTERS

USA

Numatics, Incorporated

46280 Dylan Drive
Novi, Michigan 48377

P: 1-888-Numatics
1-888-686-2842

Canada

Numatics, Ltd

P: 519-452-1777

Mexico

Numatics de Mexico S.A. de C.V.

P: 52-222-284-6176

For a comprehensive listing of all Numatics production and distribution facilities worldwide, visit:

www.numatics.com