

Air Springs



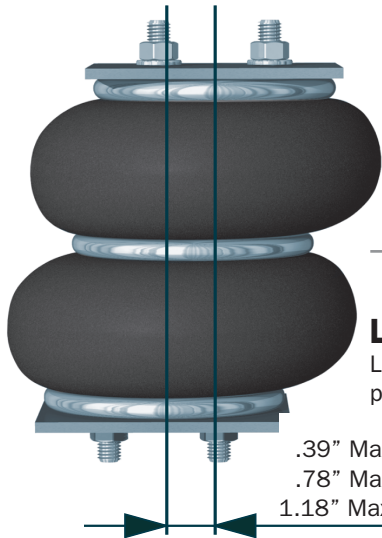
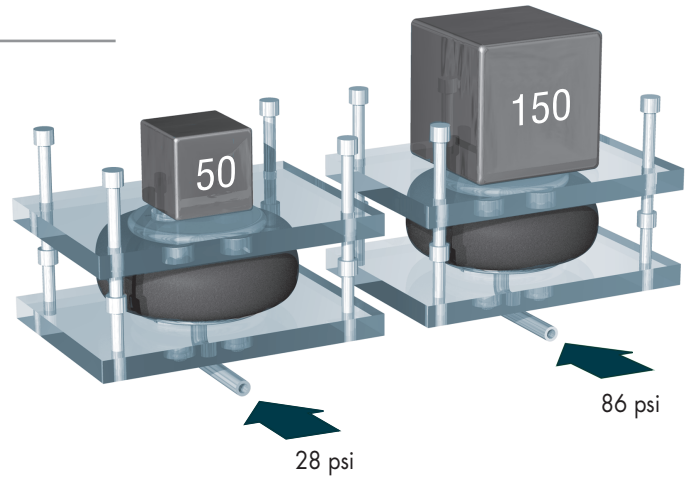
COMPACT[®]
AUTOMATION PRODUCTS



Advantages of Compact Air Springs

Versatile Construction

Varying loads can be supported by one Air Spring.



Lateral Offset

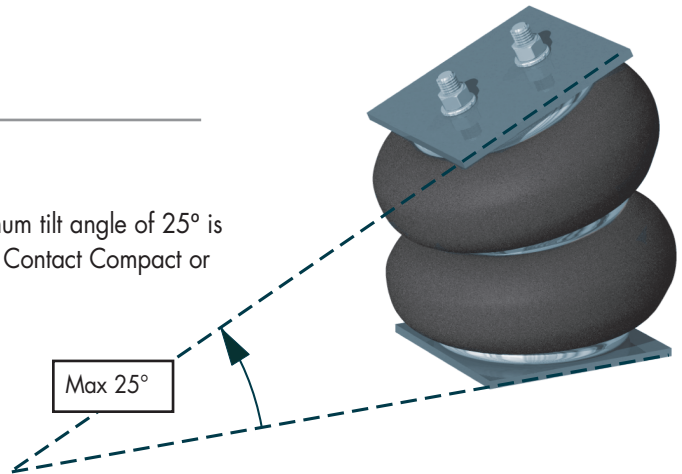
Lateral offset is allowable between the upper and lower end plates – up to .39 inches per convolution.

- .39" Max for Single
- .78" Max for Double
- 1.18" Max for Triple

Angular Displacement

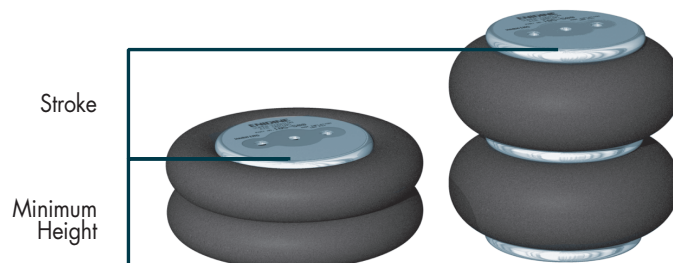
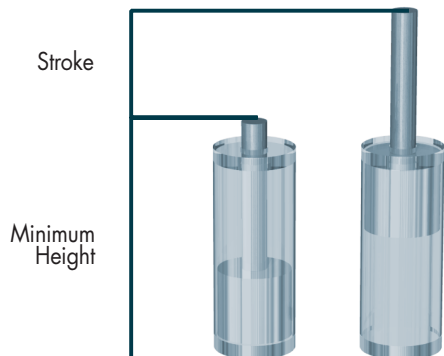
Angular displacement is possible. A maximum tilt angle of 25° is possible for Double Convolute Air Springs. Contact Compact or your local representative for technical help.

- Single Convolution 20°
- Double Convolution 25°
- Triple Convolution 30°
- Sleeve Type Rolling Lobe 15°



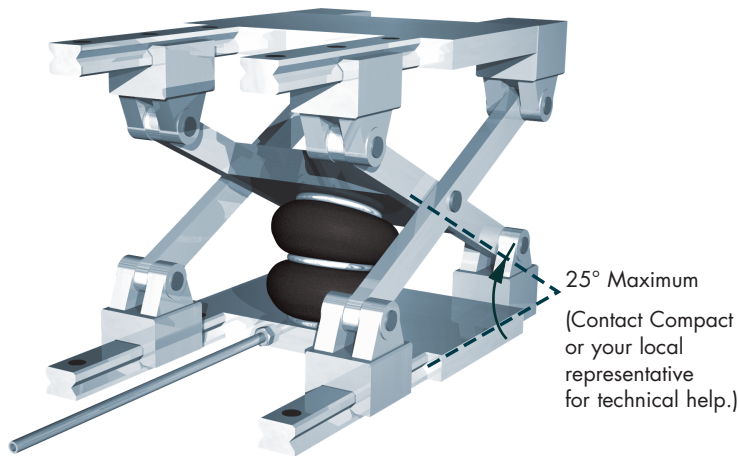
Space Saving Installed Height

The minimum height of a Compact Air Spring is significantly lower than that of a pneumatic cylinder for the same stroke.



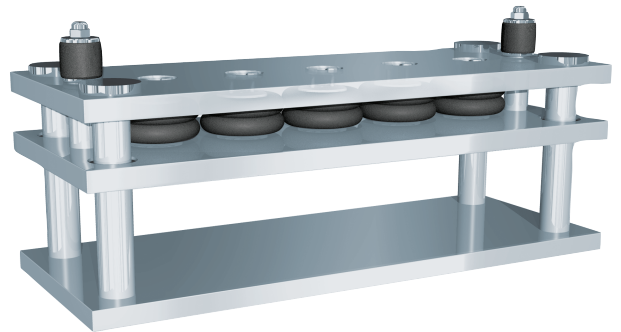
Typical Actuation Applications

Scissor Lifts (Angular Displacement)



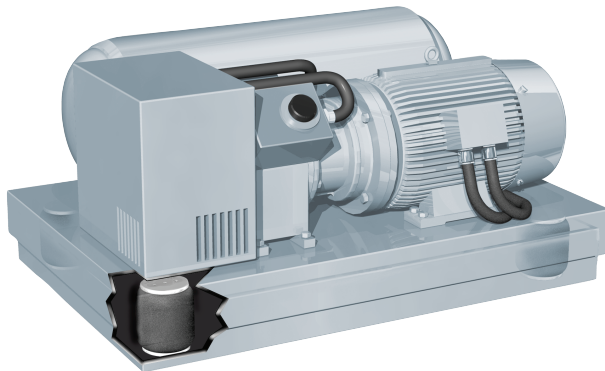
- Vertical lift force for platforms and rotating tables
- Conveyor or transfer systems
- Angular Tensioning Systems

- Presses (Veneering Press)
- Bin-tilting Devices
- Palletizers
- Label Applicators
- Amusement Park Rides
- Clutch and Brake Systems



Typical Vibration Applications

Compressors



- Vibratory Conveyors
- Large Drying Machines
- Centrifugal Separators
- Coordinate Measuring Tables and Machinery
- Commercial Laundry Machines
- Textile Looms
- Conveyor Loading Stations

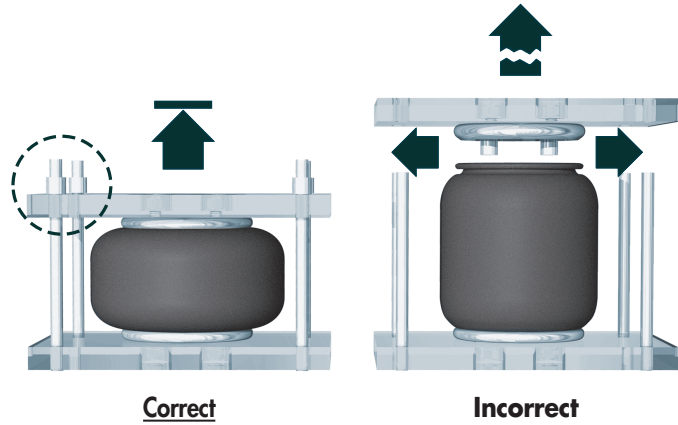
Electronic Equipment



Installation and Operation

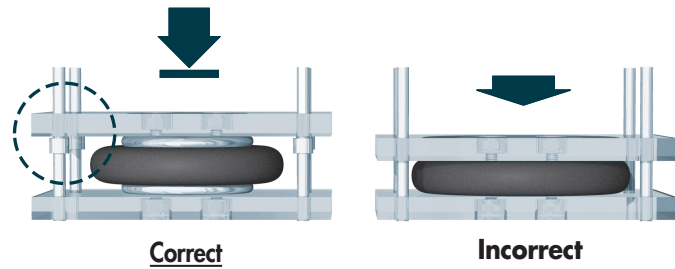
Provide Extend Stop:

Must prevent the air spring from exceeding the maximum allowable stroke height.

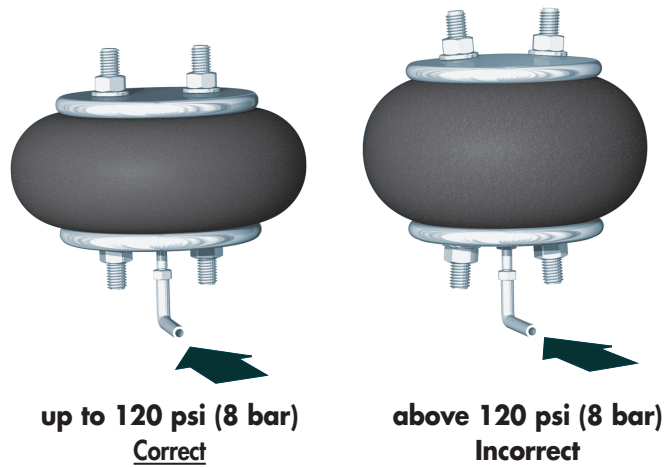


Provide Retract Stop:

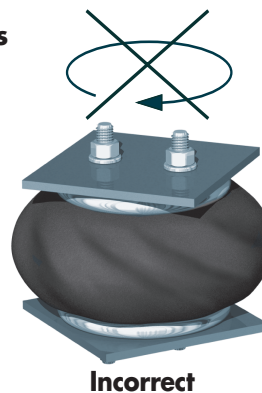
Mechanical retract stops must be provided to prevent damage from over-compression or use Air springs with optional Internal Bumper.



Do Not Exceed Maximum Pressure of 120 psi (8 bar)



Do Not Apply Torsional Loads to Air Springs



Natural Rubber (NR)

Good all-round properties make natural rubber the ideal material for standard actuators.

- Standard material for the model series C and R
- High dynamic capability
- Elasticity
- Tensile strength
- Resistance to tear propagation
- Resistance to abrasive wear

NR

Chloroprene Rubber (CR)

Chloroprene rubber boasts good resistance to environmental influences (weather, ozone, UV, aging)

- Standard material for the model series S, also available as a special version for the model series C and R
- Broader temperature range than NR
- Flame-retardant
- Limited resistance to mineral oils

CR

Epichlorohydrin (ECO)

Epichlorohydrin rubber is suitable for high-temperature applications.

- Available as a special version for the model series C, D and R
- Resistant to mineral oils and fuels
- Very high sustained heat resistance

ECO

Air Actuators with Stainless-Steel Connecting Parts

- Connecting plates made of 304 stainless steel and bead rings made of 316T and stainless steel.
- High resistance to media such as acids, chemicals and cleaning agents
- High wear-resistance and durability

Niro

Reinforced Actuators

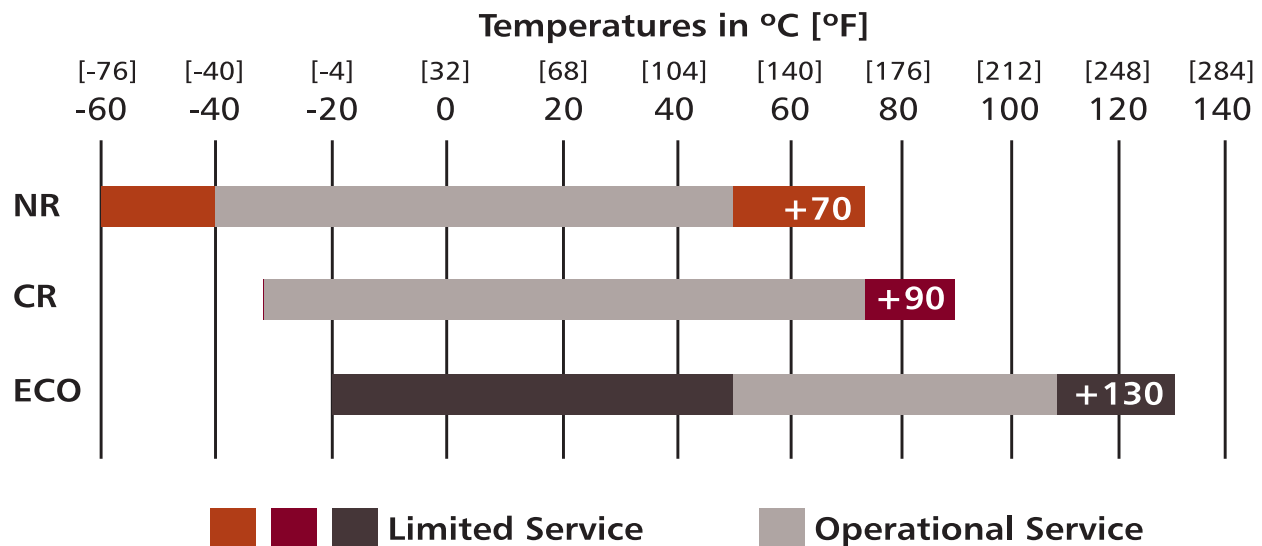
- Pressure range of the reinforced design: 0 to 12 bar (174 psi)
- Designs for pressure above 12 bar (174 psi) available on request

HP

Air Actuator with Tank Valve

- Air inlet and air outlet via tank valve
- Operation without permanent high-pressure supply
- Connection identical to car tire valves, allows for easy filling

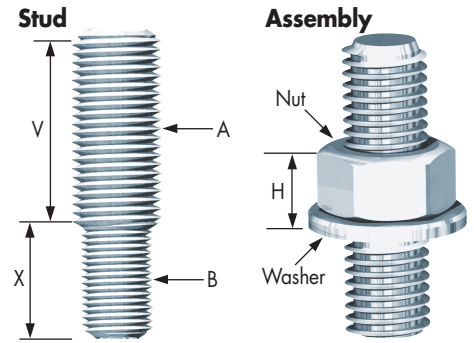
V



General Information | Accessories

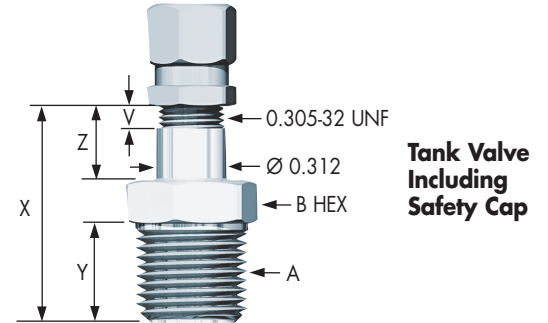
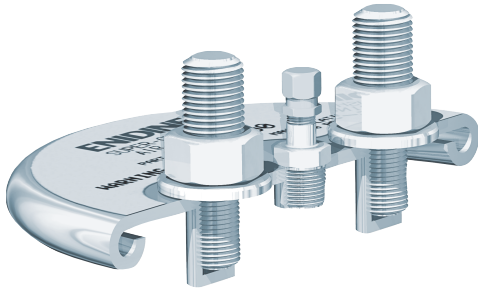
Assembly (Stud + Nut + Washer)

Part Number	A	B	H	V	X
			in.	in.	in.
YI-578-29-056	1/2" UNC	3/8" UNC	.53	2.50	.56



Tank Valves Including Safety Cap

Part Number	A	B	V	X	Y	Z
		in.	in.	in.	in.	in.
YI-579-08-9-033	1/8" NPTF	.44	.31	1.31	.38	.75
YI-578-92-9-122	1/4" NPTF	.56	.31	1.31	.56	.56
YI-579-08-9-033M	1/8" BSP	.51	.31	1.66	.51	.87
YI-578-92-9-122M	1/4" BSP	.91	.31	1.66	.51	.87



How to Order Compact Air Springs

Part Number Example: FS530-11-01230

TYPE	STYLE	SIZE	STROKE	HEAD	MOUNT	PORT	OPTION
F	S	530	11	0	1	3	0
1	2	3	4	5	6	7	8

1 Type

F	Bellows Air Spring
R	Rolling Lobe Air Spring
S	Sleeve-Type Rolling Lobe

3 Size

Mean Effective Surface Area, guide value in cm ² (See catalog pages for availability)

7 Port

0	Bead Ring or Bellows Only
1	1/8" NPT
2	1/4" NPT
3	1/2" NPT
4	3/4" NPT
5	1" NPT
6	G18
7	G14
8	G38
9	G12
A	G34
B	G1

2 Style

S	Single Convolution Bellow
D	Double Convolution Bellow
T	Triple Convolution Bellow
Z	Cylindrical Rolling Lobe
K	Conical Rolling Lobe

4 Stroke

Guide value in cm (See catalog pages for availability)

5 Head

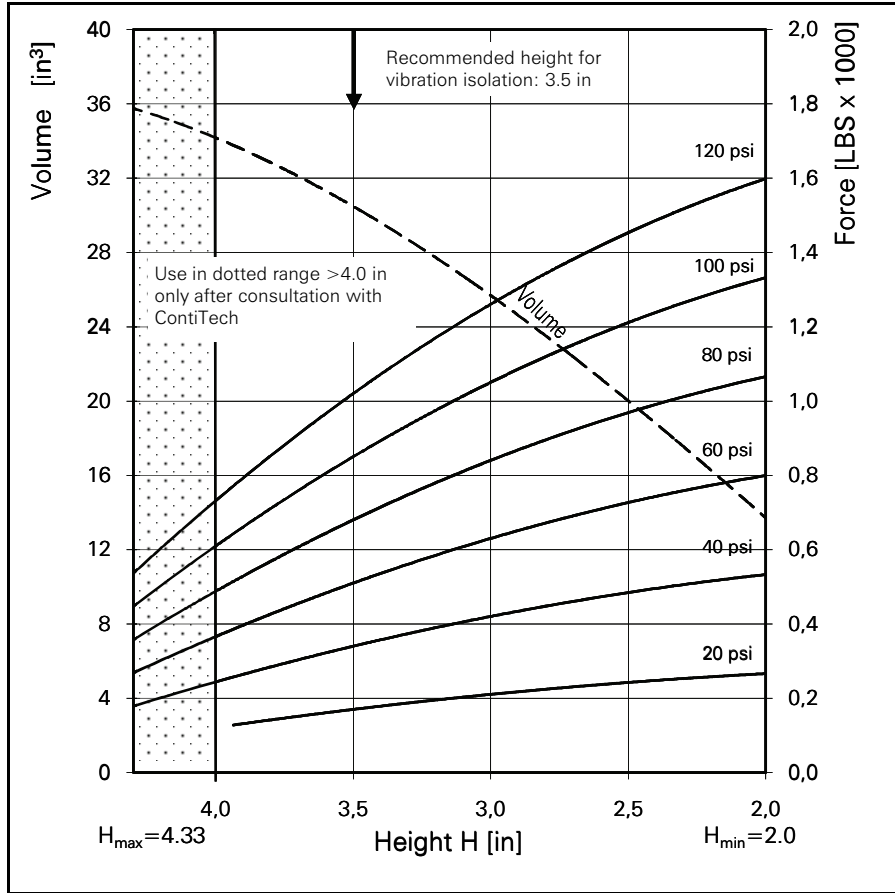
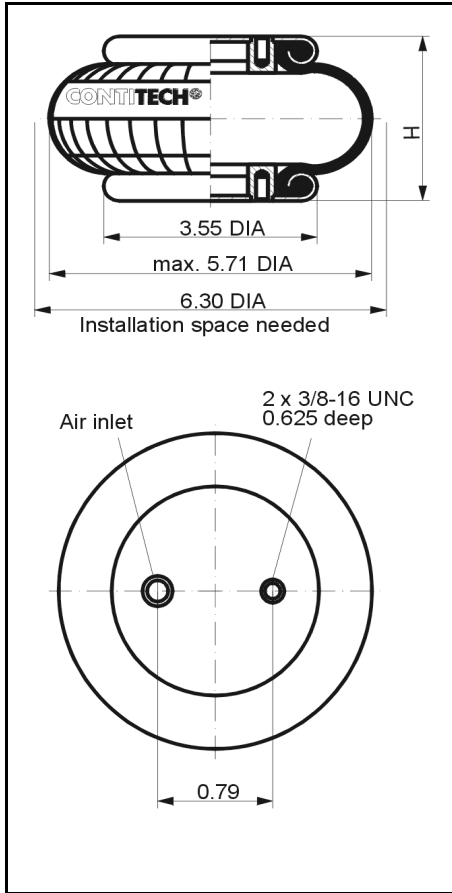
0	Flanged Plate
1	Removable Connecting Parts
2	Bead Ring
3	Sleeve or Lobe Style

6 Mount

1	Female Thread
2	Male Thread

8 Option

0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	F - 304 SS, R or S - 316 SS
7	Tank Valve
8	Elastomer Bellows Only



FS 40-6 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 27 lbs
Overall weight with clamped plates	2.0 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]	340	510	680	850	1020		30
Spring rate [lbs/in]	415	570	724	846	995		
Natural frequency [Hz]	3.6	3.4	3.3	3.2	3.1		

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	240	360	480	610	34
	3	210	420	630	840	1050	26
	2	270	530	800	1060	1330	14

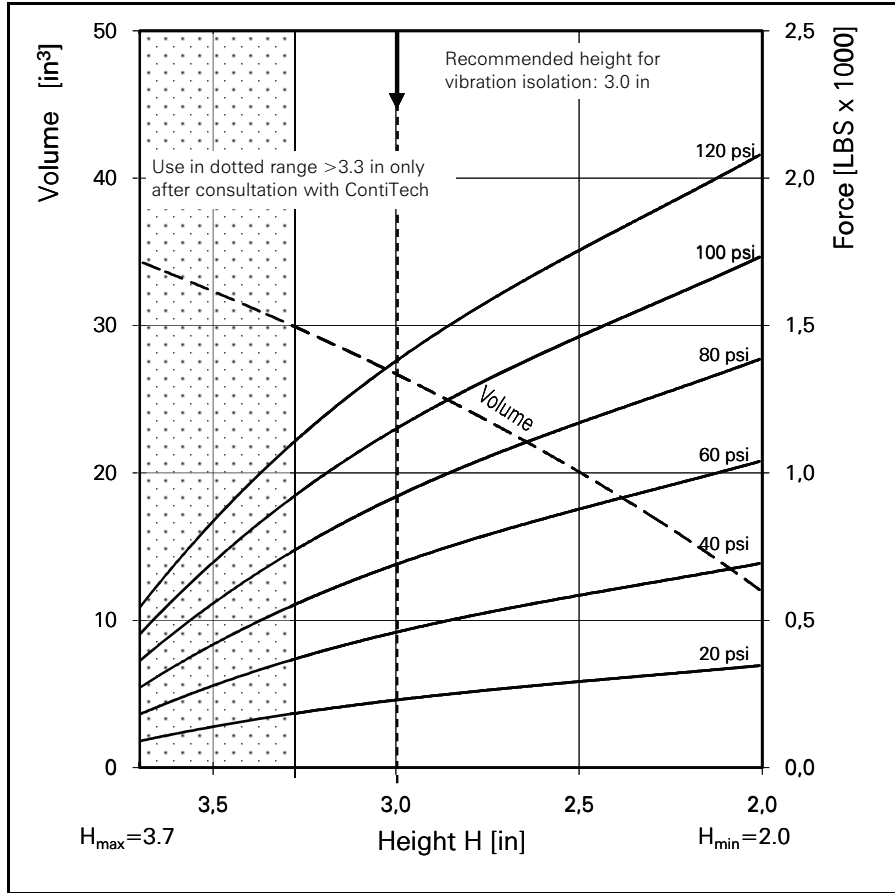
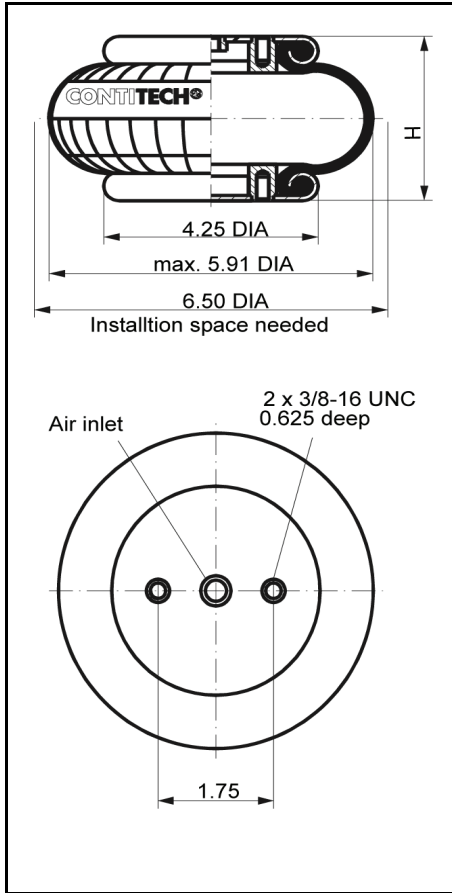


Service instructions

3/8-16UNC = 15-20 LBxFT

1/8 NPT = 12-15 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 50-5 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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		24
Spring rate [lbs/in]	793	1128	1442	1710	1972		
Natural frequency [Hz]	3.9	3.8	3.7	3.7	3.6		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	3	230	460	680	910	1140	24
	2.5	290	580	880	1170	1460	20
	2	350	690	1040	1390	1740	12

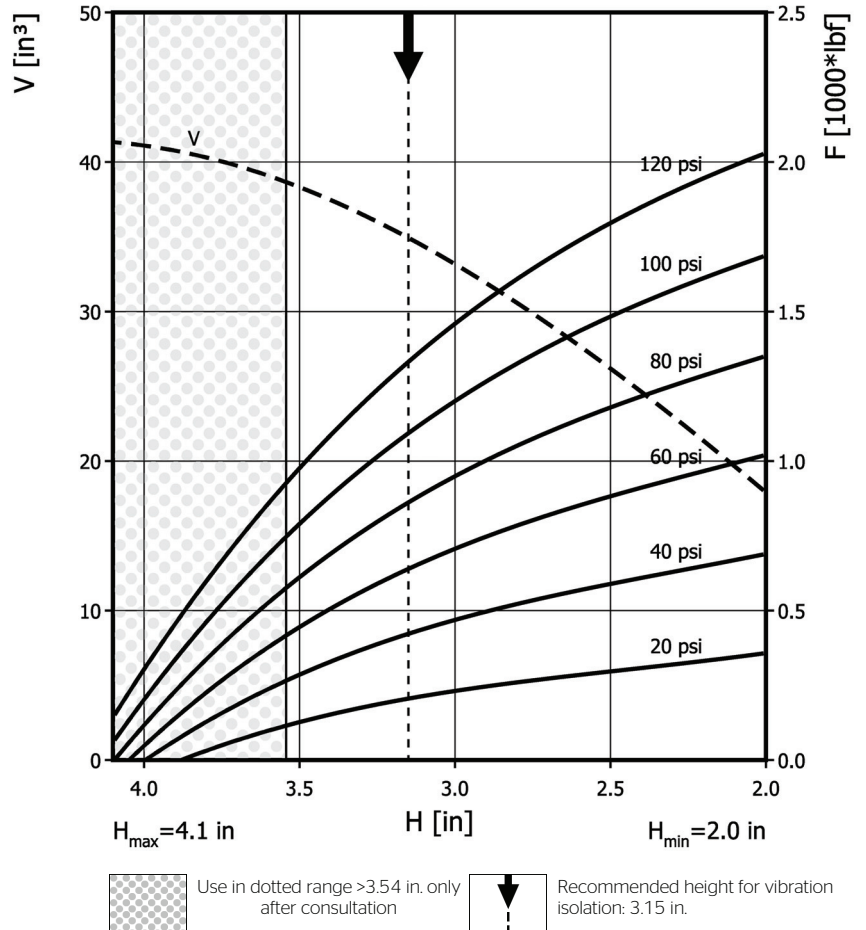
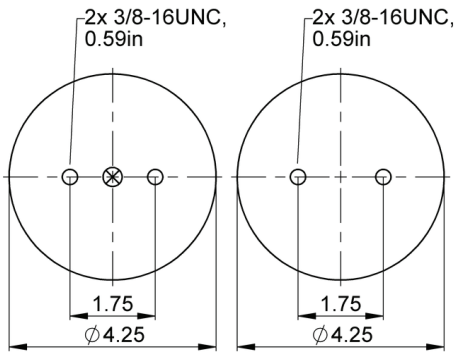
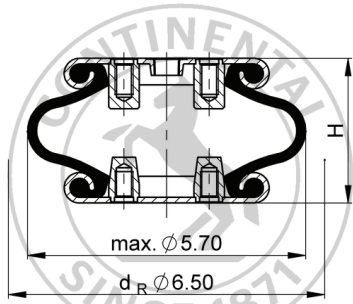


Service instructions

3/8 - 16 UNC = 15-20 LBxFT

1/4 NPT = 12-15 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0	psi
Return force to min height	≤ 34	lbf
Overall weight	2.6	lb

Vibration isolation - dynamic characteristic values

Design height H: recommended 3.15 inch, minimum 2.76 inch

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Force (Load)	[lbf]	485	731	977	1220	1470	35.1
Spring rate	[lbf/in.]	657	917	1170	1430	1680	
Natural frequency	[Hz]	3.7	3.5	3.4	3.4	3.4	

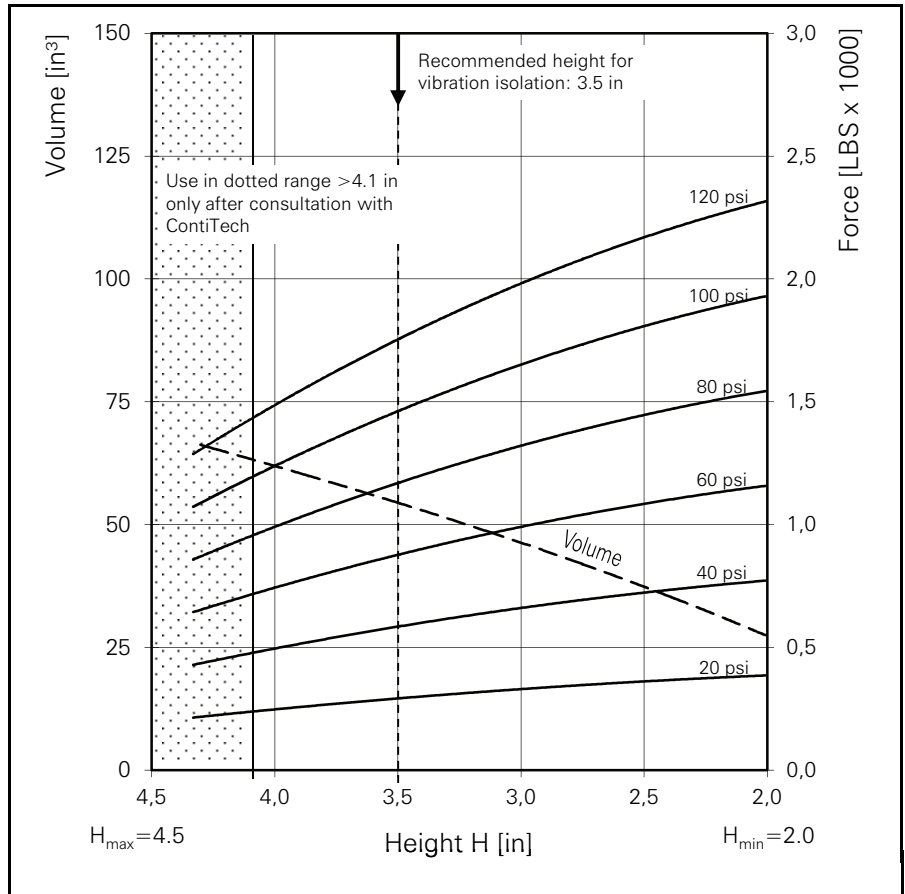
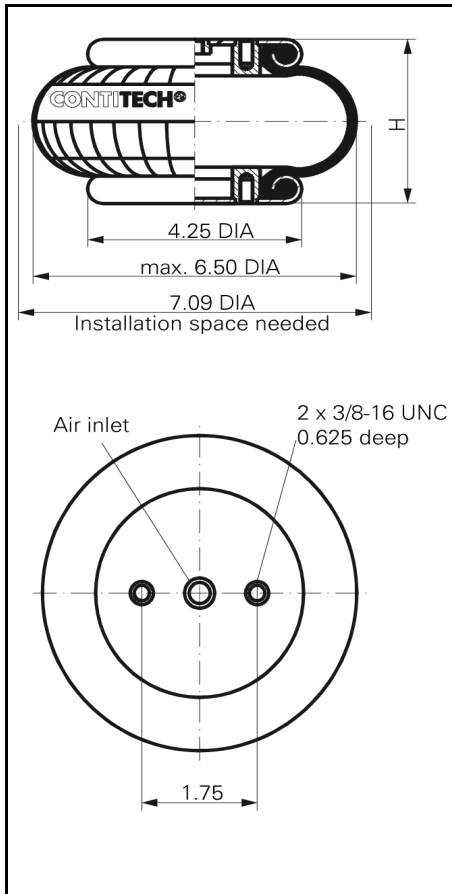
Pneumatic application - static characteristic values

Force F [lbf]

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Height H [in.]	3.3	383	584	790	1010	1230	36
	3.0	466	703	946	1200	1450	33
	2.8	533	803	1070	1360	1640	30
	2.5	591	883	1180	1480	1800	26



Service instructions
 3/8-16 UNC: max. 20 lbf ft
 1/4 NPT: max. 20 lbf ft
 3/4 NPT: max. 40 lbf ft



FS 70-7 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load)	[lbs]	580	880	1170	1460	1750		54
Spring rate	[lbs/in]	546	750	964	1159	1373		
Natural frequency	[Hz]	3.1	2.9	2.9	2.8	2.8		

Pneumatic application - static characteristic values

Force F [lbs]

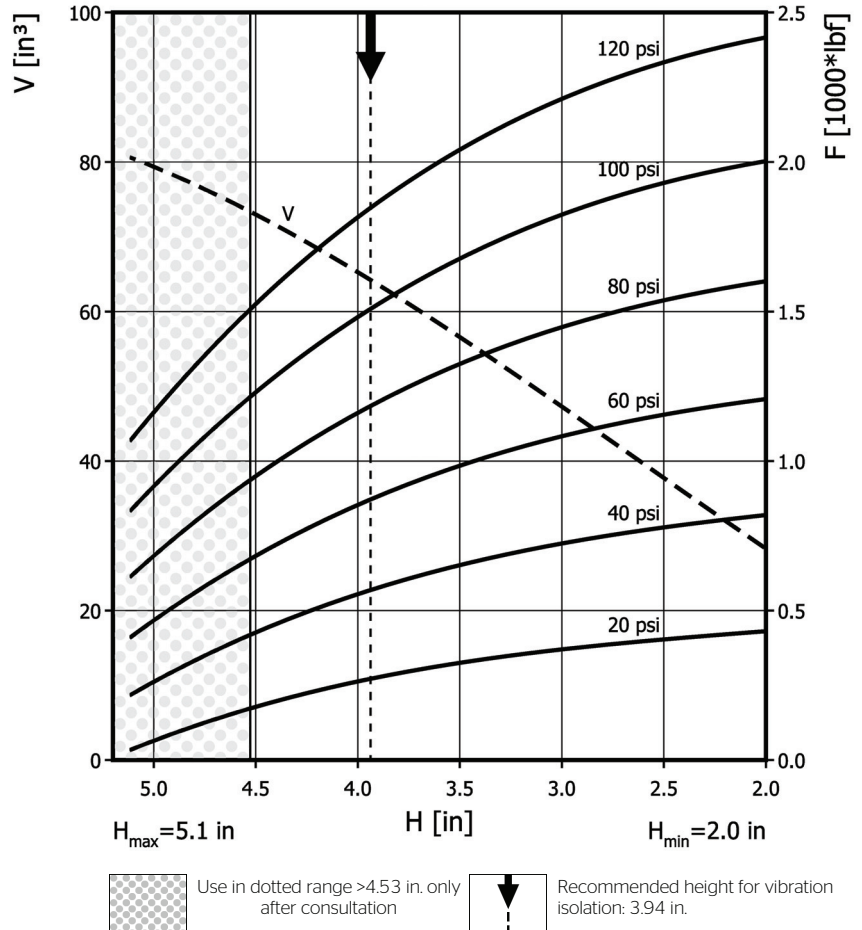
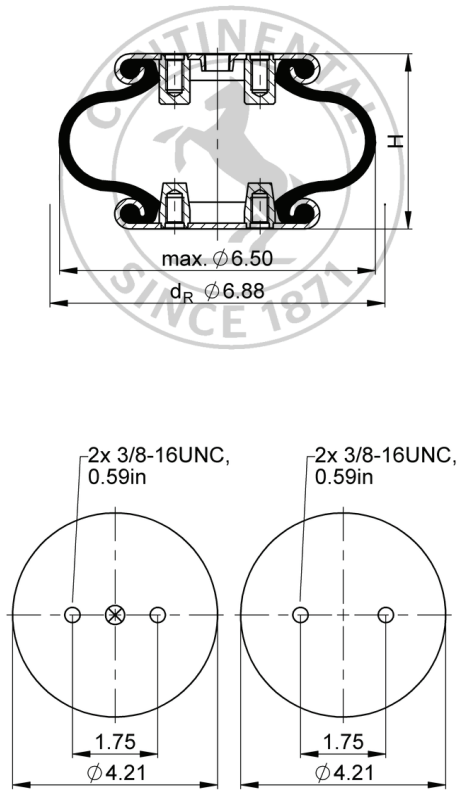
Pressure p	[psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	4.0	250	490	740	990	1230	1480	62
	3.5	290	580	880	1170	1460	1750	54
	3.0	330	660	990	1320	1650	1980	46
	2.5	360	720	1090	1450	1810	2170	37



Service instructions

- 3/8-16 UNC = 15-20 LBxFT
- 1/4 NPT = 15-20 LBxFT
- 3/4 NPT = 30-40 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0	psi
Return force to min height	≤ 45	lbf
Overall weight	2.6	lb

Vibration isolation - dynamic characteristic values

Design height H: recommended 3.94 inch, minimum 2.76 inch

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Force (Load)	[lbf]	567	871	1180	1490	1800	64.5
Spring rate	[lbf/in.]	545	726	904	1080	1260	
Natural frequency	[Hz]	3.0	2.9	2.8	2.7	2.6	

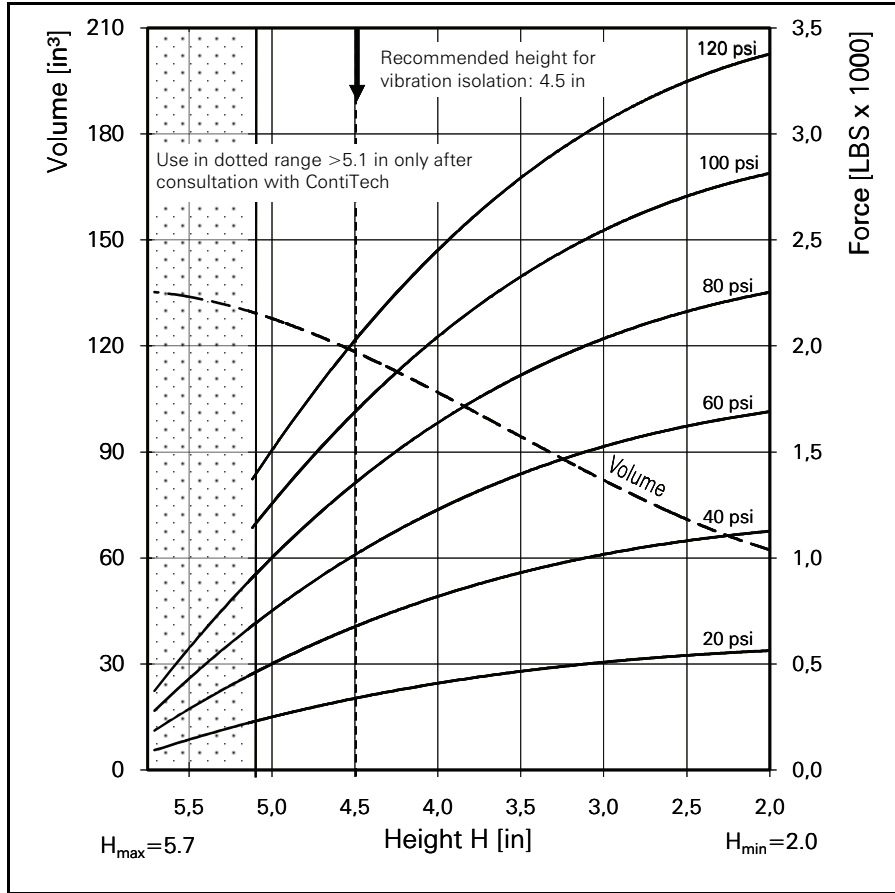
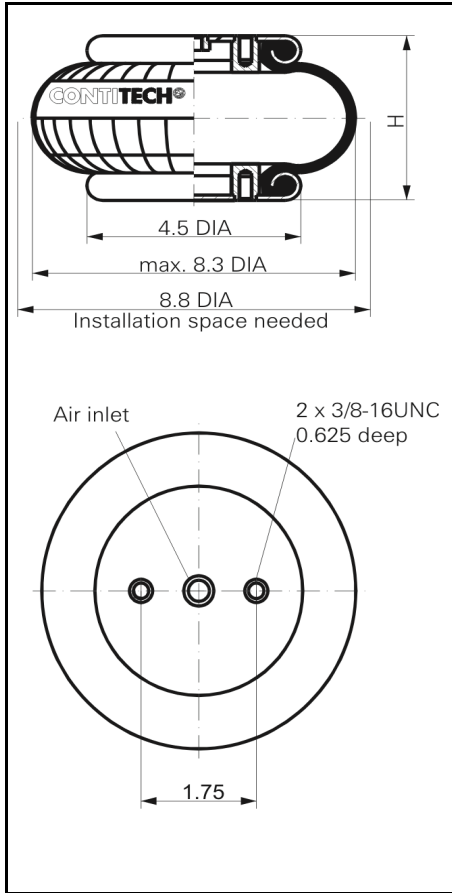
Pneumatic application - static characteristic values

Force F [lbf]

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Height H [in.]	4.5	423	679	945	1230	1520	73
	4.0	553	852	1160	1480	1810	65
	3.5	652	983	1320	1670	2040	57
	3.0	724	1080	1450	1820	2210	47



Service instructions
 3/8-16 UNC: max. 20 lbf ft
 1/4 NPT: max. 20 lbf ft
 3/4 NPT: max. 40 lbf ft



FS 100-10 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 9 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. V [in ³]
Force (Load) [lbs]	670	1010	1350	1680	2020		118
Spring rate [lbs/in]	518	749	982	1201	1428		
Natural frequency [Hz]	2.8	2.7	2.7	2.7	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]	5.0	250	500	750	1000	1250	1500	128
	4.0	410	820	1230	1640	2050	2460	107
	3.0	510	1020	1530	2030	2540	3050	82
	2.0	560	1120	1690	2250	2810	3370	63

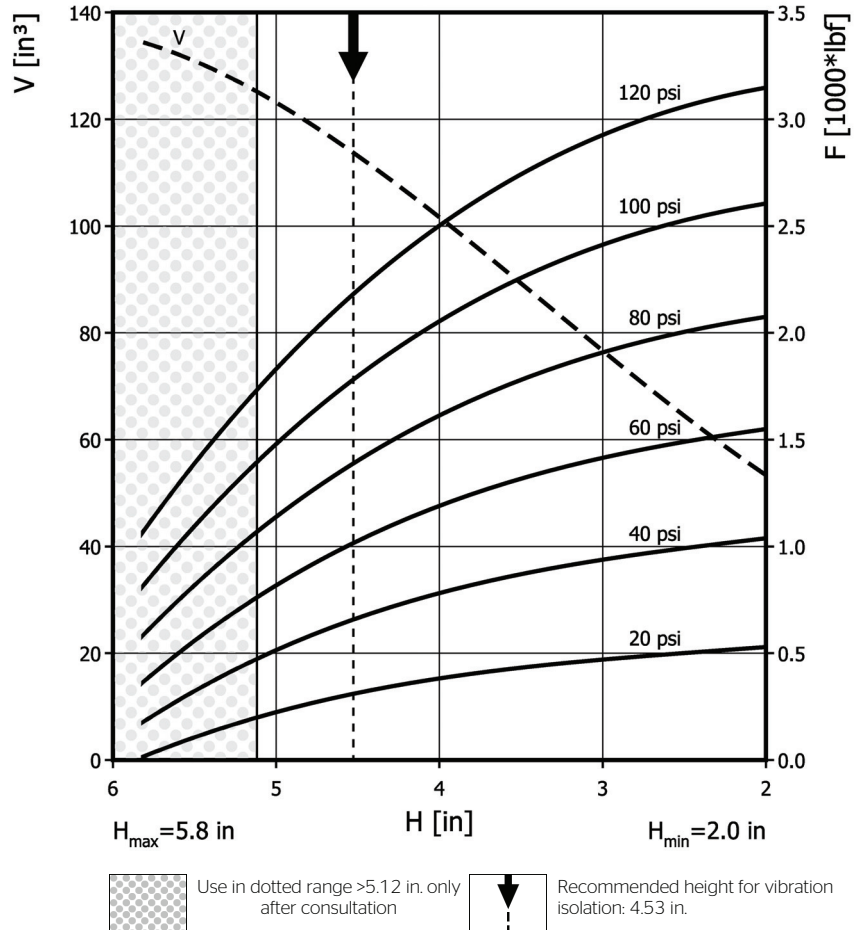
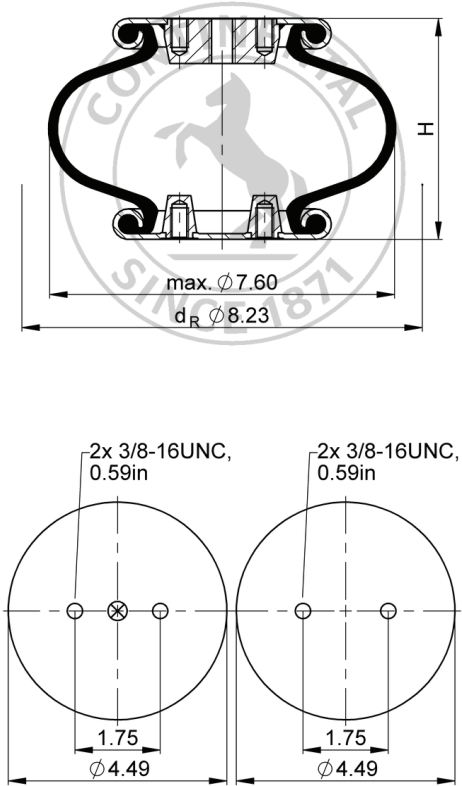


Service instructions

3/8-16 UNC = 15-20 LBxFT

1/4 NPT = 12-15 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0	psi
Return force to min height	≤ 22	lbf
Overall weight	3.1	lb

Vibration isolation - dynamic characteristic values

Design height H: recommended 4.53 inch, minimum 3.94 inch

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Force (Load)	[lbf]	805	1230	1650	2080	2510	114
Spring rate	[lbf/in.]	607	827	1050	1270	1490	
Natural frequency	[Hz]	2.7	2.6	2.5	2.4	2.4	

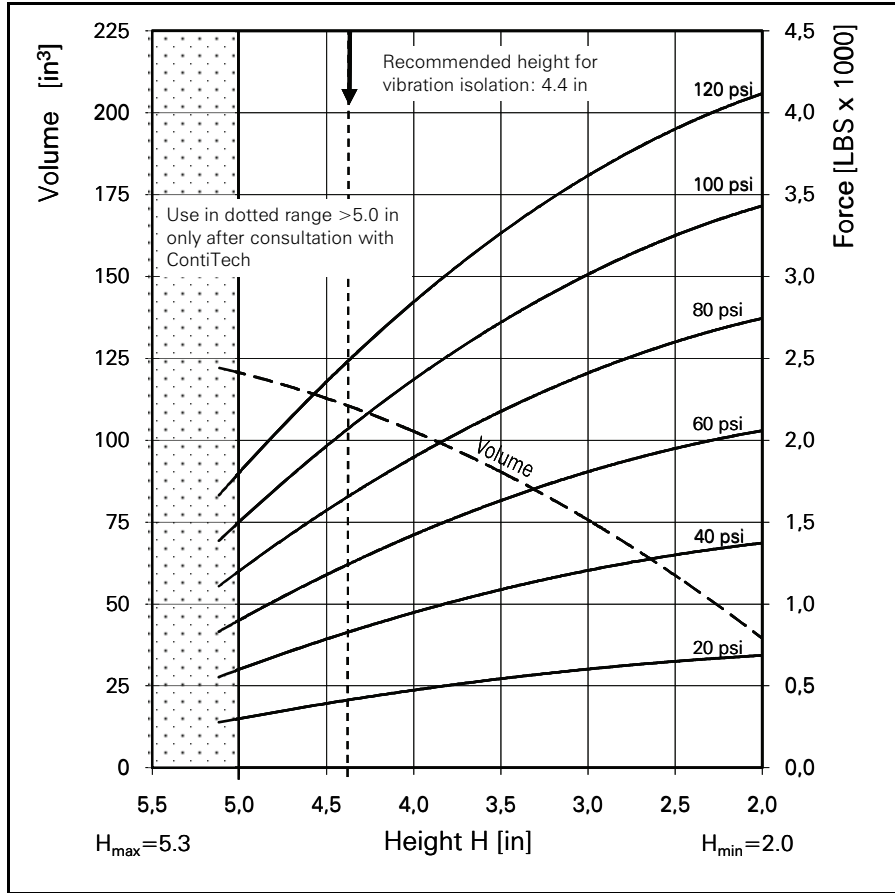
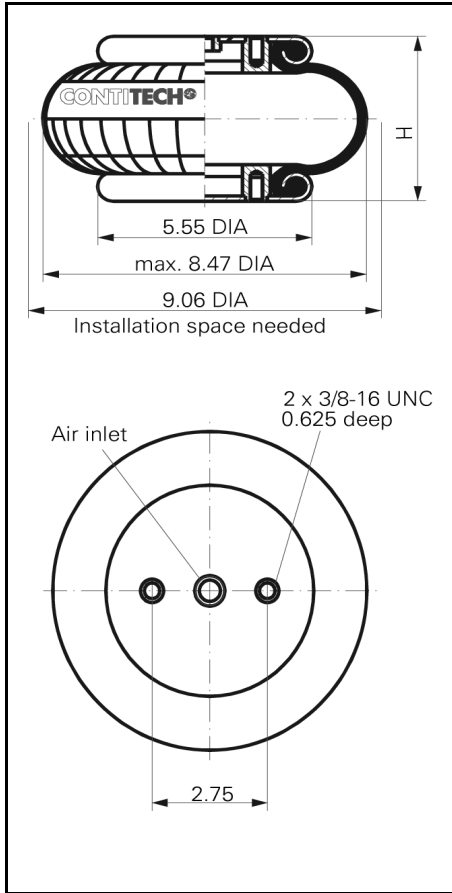
Pneumatic application - static characteristic values

Force F [lbf]

Pressure p	[psi]	40	60	80	100	120	Vol. V [in.³]
Height H [in.]	4.5	658	1020	1390	1790	2190	110
	4.0	779	1190	1610	2050	2500	100
	3.5	871	1320	1780	2260	2740	89
	3.0	939	1420	1910	2410	2920	77



Service instructions
 3/8-16 UNC: max. 20 lbf ft
 1/4 NPT: max. 20 lbf ft
 3/4 NPT: max. 40 lbf ft



FS 120-9 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	820	1230	1640	2050	2460		111
Spring rate [lbs/in]	690	957	1213	1426	1677		
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	1510	1810	120
	4	470	950	1420	1900	2370	2850	105
	3	600	1200	1800	2410	3010	3610	75
	2	690	1370	2060	2750	3430	4120	43

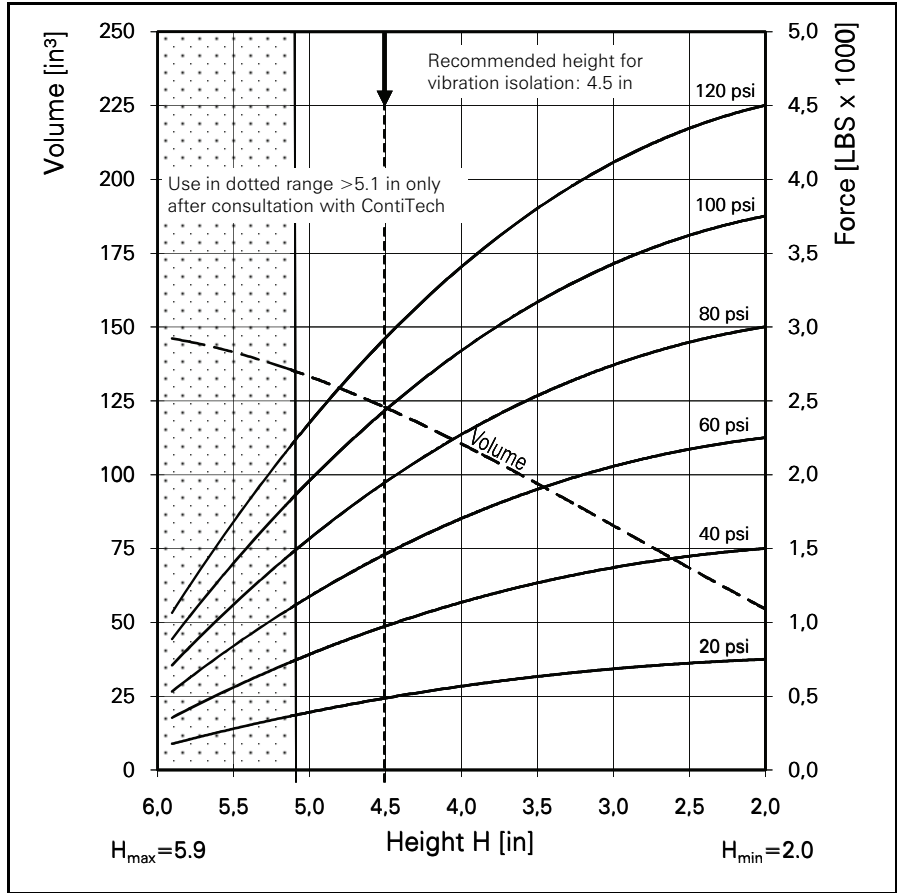
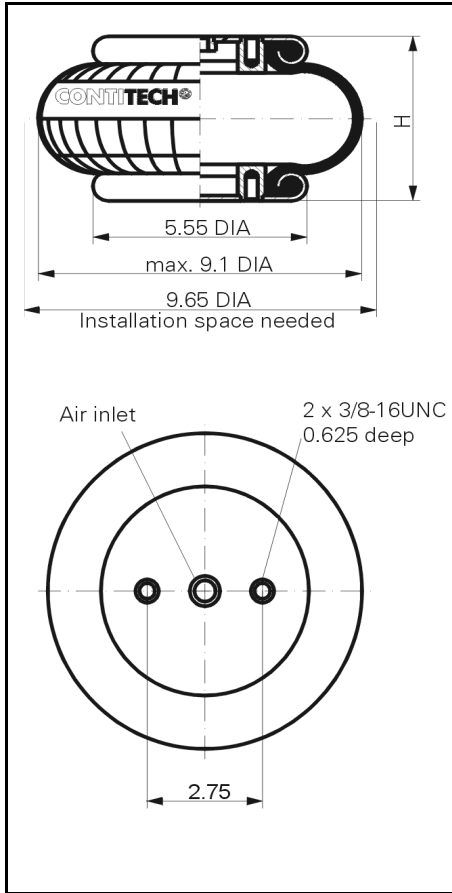


Service instructions

3/8-16 UNC = 15-20 LBxFT

3/4 NPTF = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 120-10 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	970	1450	1940	2420	2910		123
Spring rate [lbs/in]	693	1004	1316	1558	1866		
Natural frequency [Hz]	2.7	2.6	2.6	2.5	2.5		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	5	390	790	1180	1580	1970	2360	133
	4.5	480	970	1450	1940	2420	2910	123
	4.0	570	1130	1700	2270	2830	3400	111
	3.5	630	1260	1890	2530	3160	3790	96
	3.0	690	1380	2060	2750	3440	4130	83
	2.5	720	1450	2170	2890	3620	4340	68

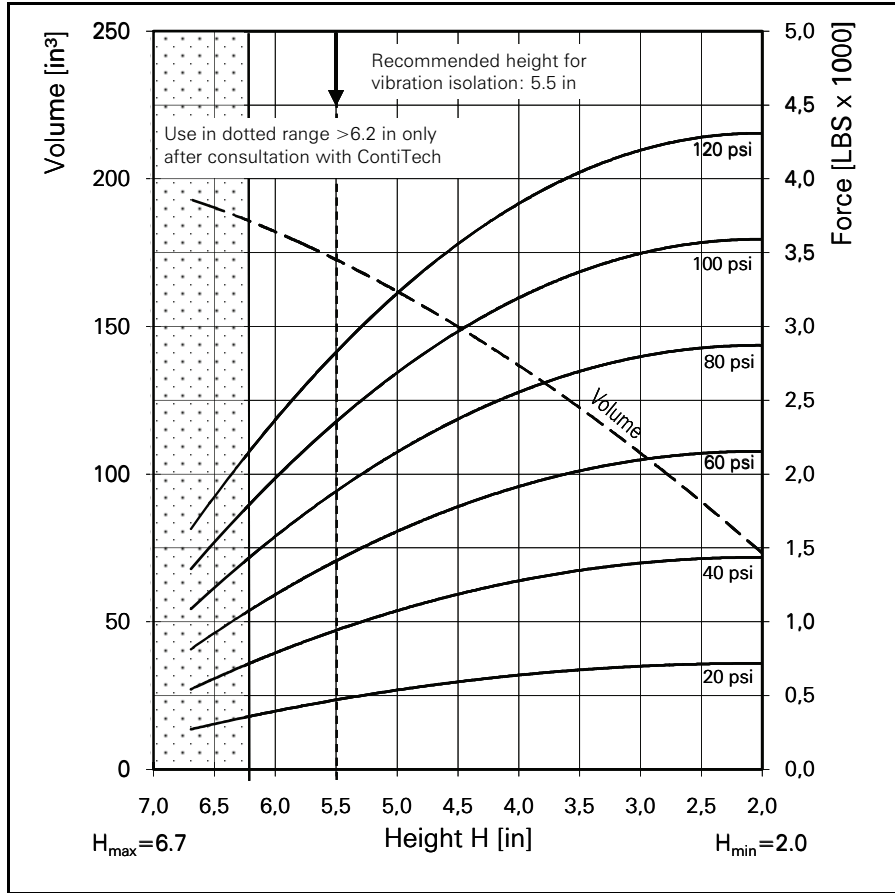
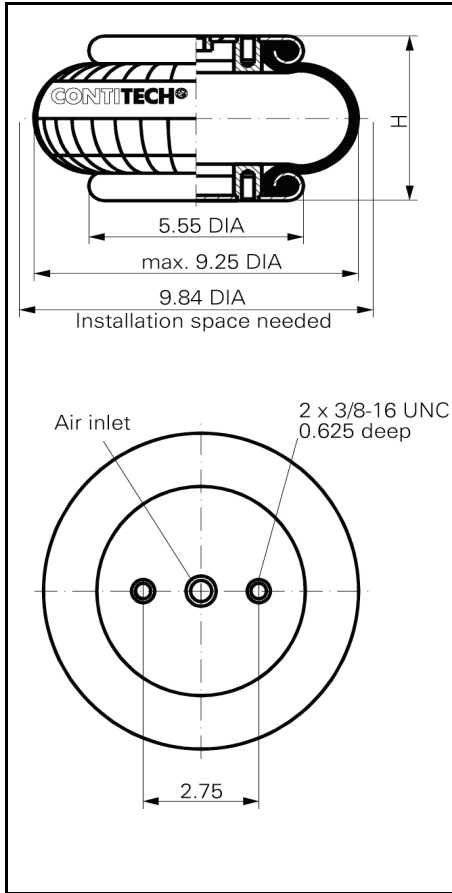


Service instructions

3/8-16 UNC = 15-20 LBxFT

1/4 NPT = 12-15 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 120-12 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	950	1420	1890	2370	2840		173
Spring rate [lbs/in]	609	856	1090	1294	1524		
Natural frequency [Hz]	2.5	2.4	2.4	2.3	2.3		

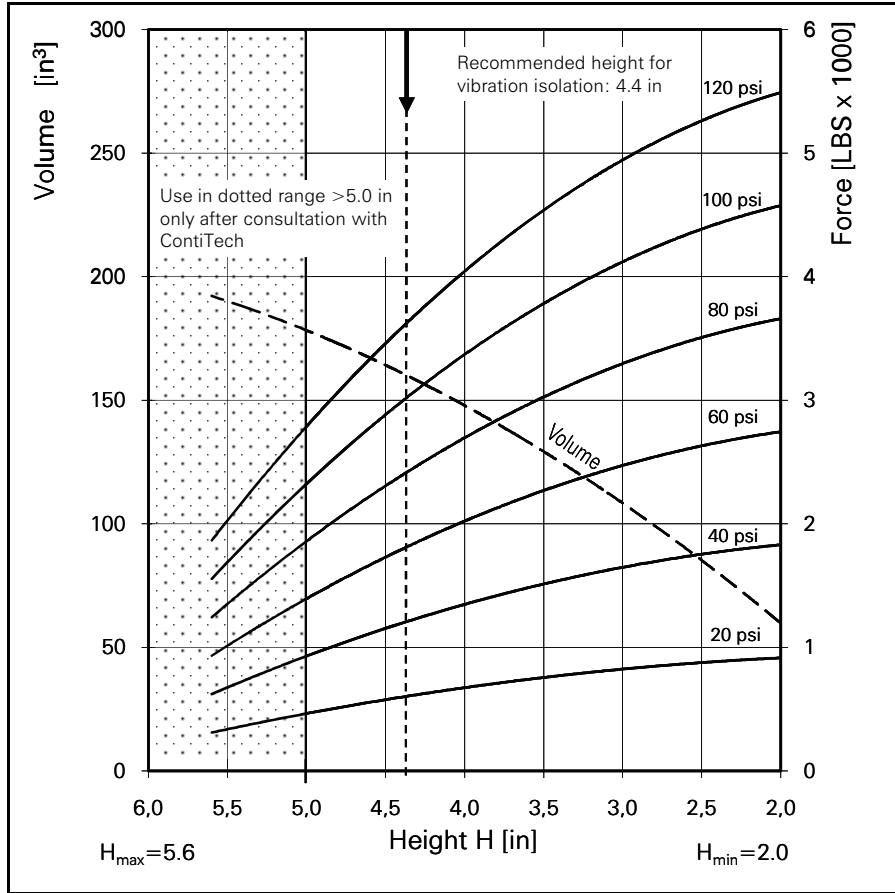
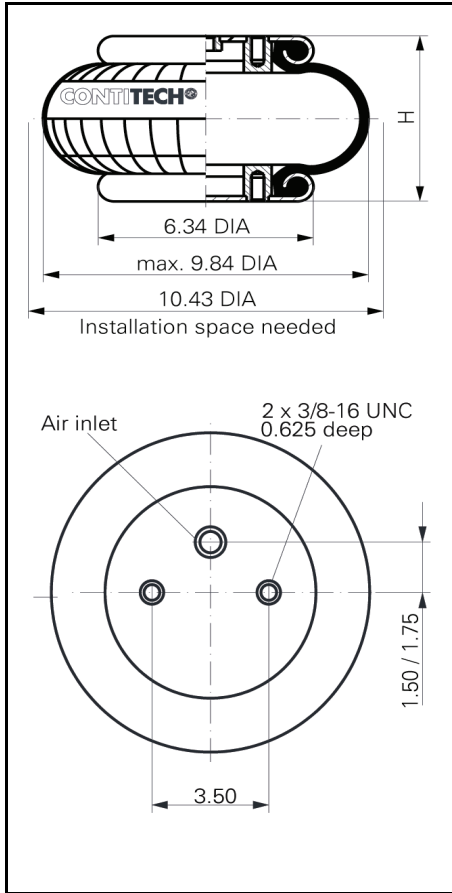
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	6.0	400	790	1190	1580	1980	2370	181
	5.5	470	950	1420	1890	2370	2840	173
	5.0	540	1080	1610	2150	2690	3230	162
	4.5	590	1180	1770	2360	2960	3550	150
	4.0	640	1280	1910	2550	3190	3830	136
	3.5	670	1340	2020	2690	3360	4030	122
	3.0	700	1390	2090	2790	3490	4180	107

 Service instructions
 3/8-16 UNC = 15-20 LBxFT
 3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 200-10 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	1200	1800	2400	3000	3600		166
Spring rate [lbs/in]	787	1211	1638	2081	2510		
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	1900	2370	2850
	4	670	1350	2020	2690	3360	4040
	3	820	1640	2460	3280	4100	4930
	2	920	1840	2760	3680	4600	5520

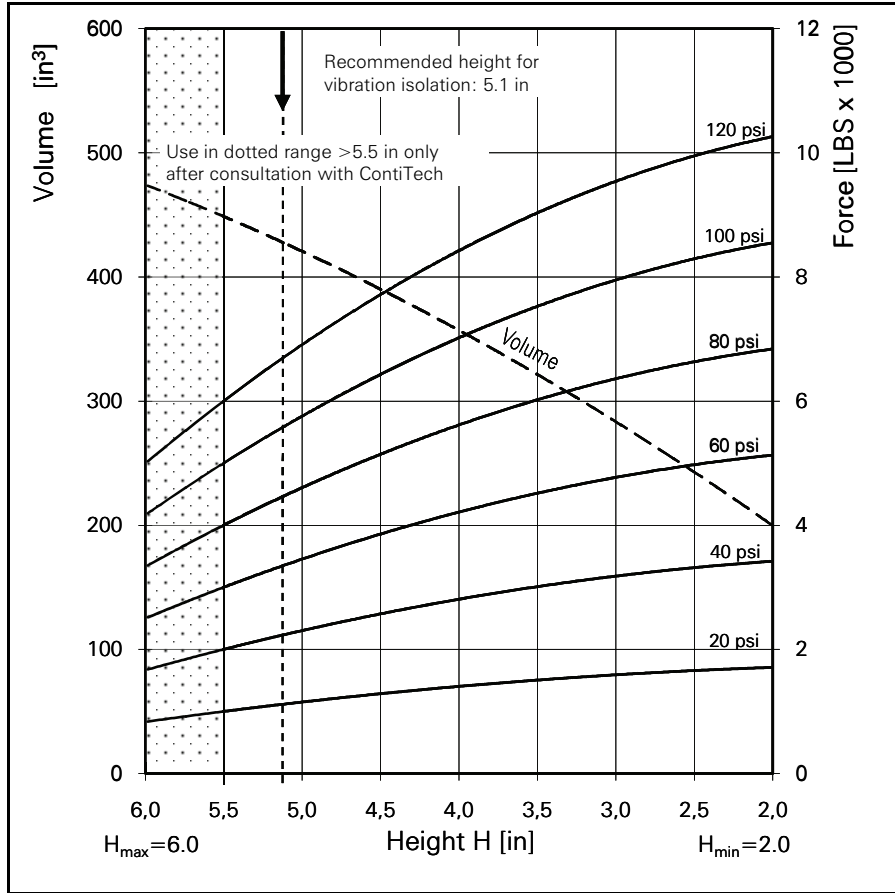
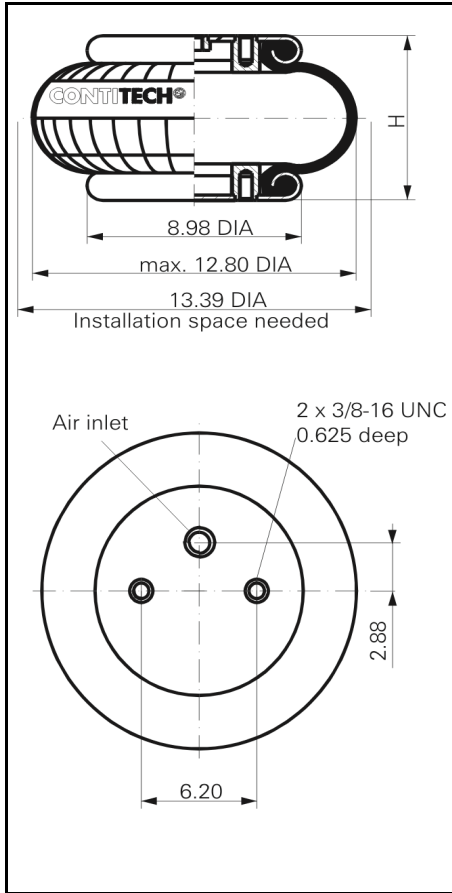


Service instructions

3/8 - 16 UNC = 15-20 LBxFT

3/4 NPTF = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 330-11 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	2450	3680	4900	6130	7350		424
Spring rate [lbs/in]	1388	1943	2479	2939	3466		
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	419
	4	1400	2800	4210	5610	7010	8410	358
	3	1590	3180	4760	6350	7940	9530	281

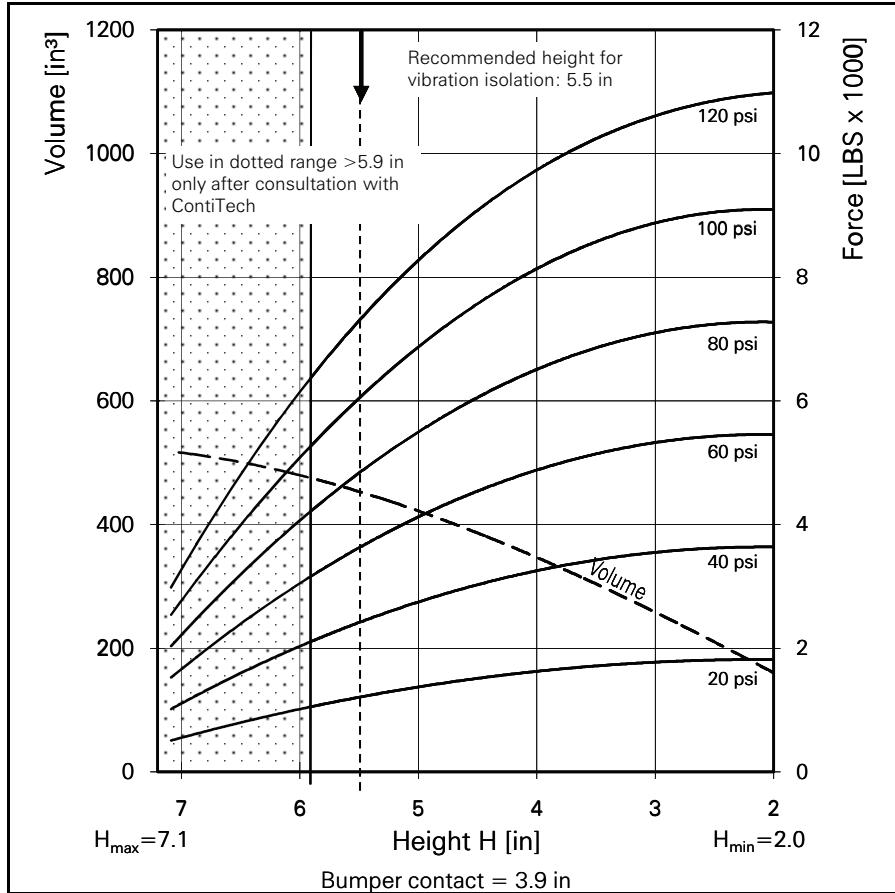
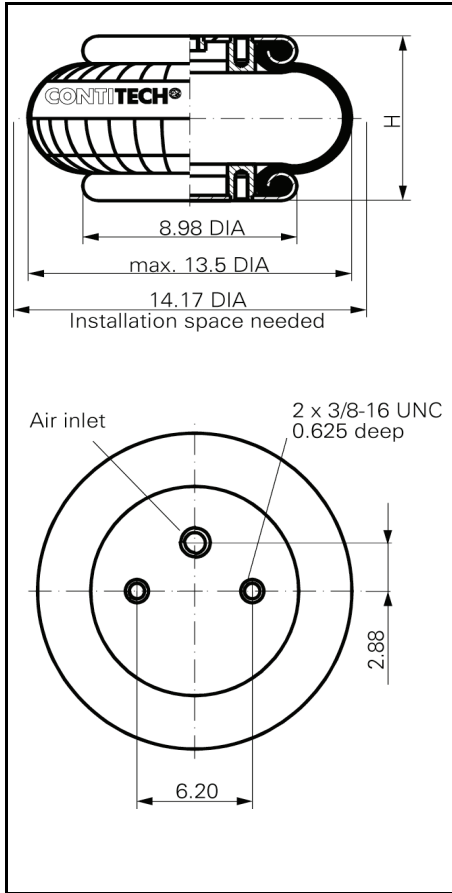


Service instructions

3/8 - 16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 330-14 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 67 lbs
Overall weight with clamped plates	9.5 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5.5 inch, minimum 4.7 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	2420	3630	4850	6060	7270		454
Spring rate [lbs/in]	1370	1962	2579	3193	3765		
Natural frequency [Hz]	2.4	2.3	2.3	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]	5.5	1210	2420	3630	4850	6060	7270	454
	5.0	1370	2740	4100	5470	6840	8210	422
	4.5	1510	3020	4530	6040	7550	9060	385
	4.0	1630	3250	4880	6500	8130	9750	347
	3.5	1710	3410	5120	6830	8540	10240	304
	3.0	1770	3540	5300	7070	8840	10610	260

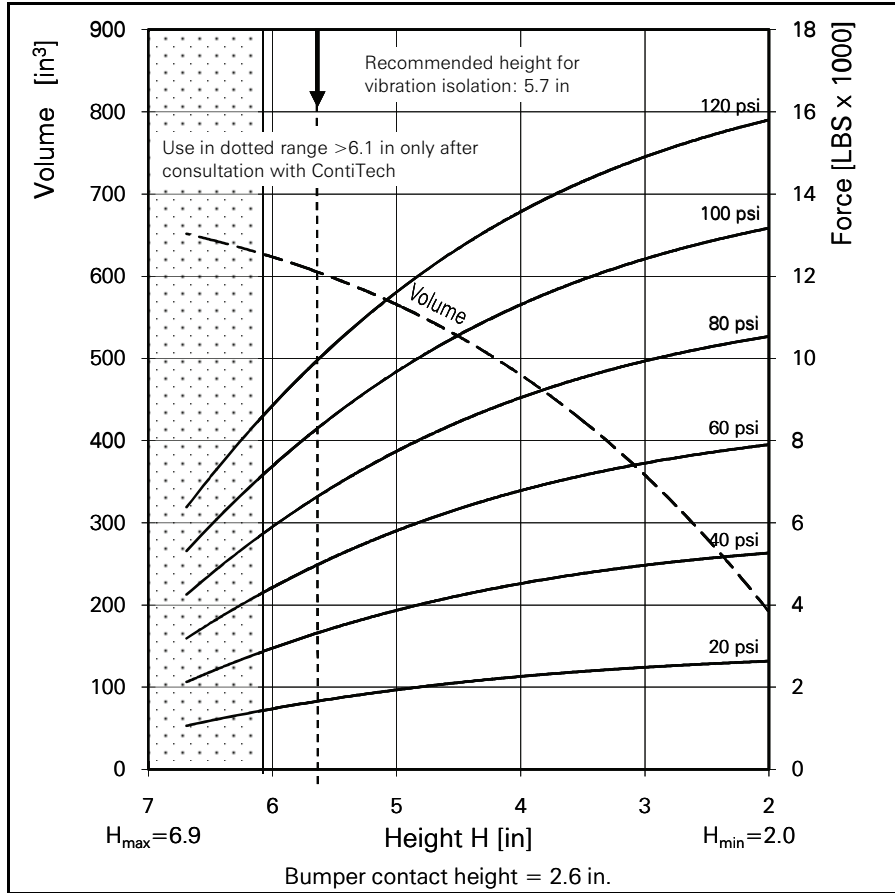
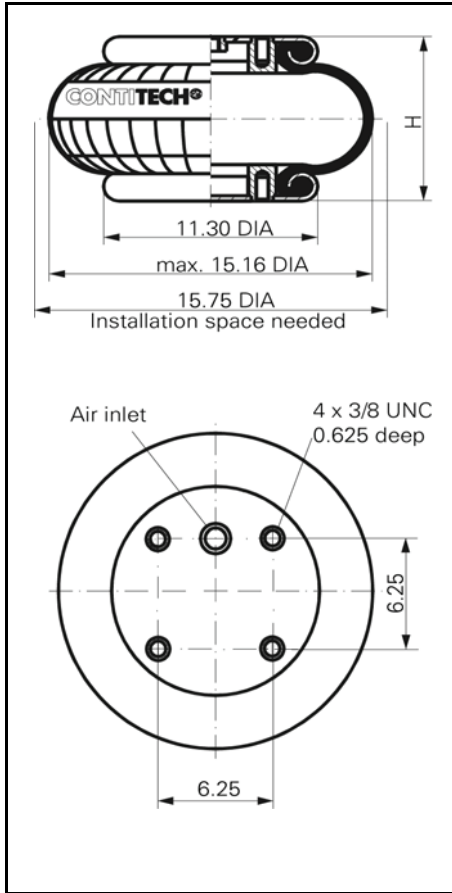


Service instructions

3/8-16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 530-11 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 67 lbs
Overall weight with clamped plates	13 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. V [in ³]
Force (Load) [lbs]	3260	4900	6530	8160	9790		607
Spring rate [lbs/in]	2084	2953	3830	4572	5403		
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	5930	7420	8900	622
	5	1930	3860	5790	7720	9660	11590	564
	4	2260	4510	6770	9020	11280	13540	482
	3	2480	4970	7450	9930	12410	14900	357

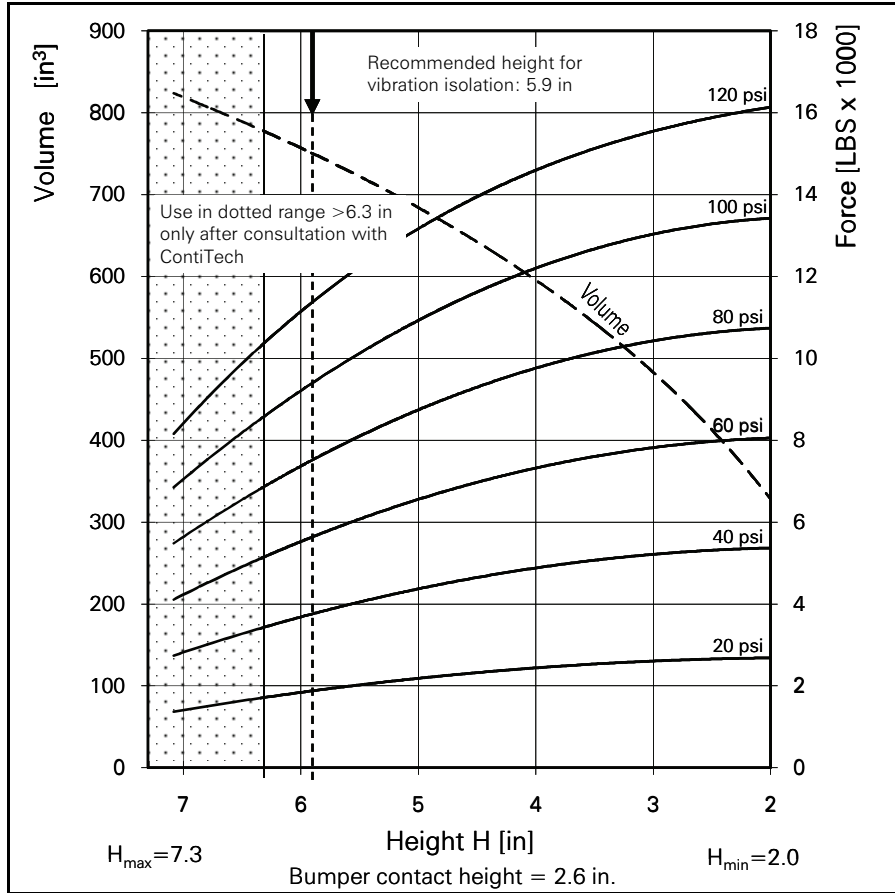
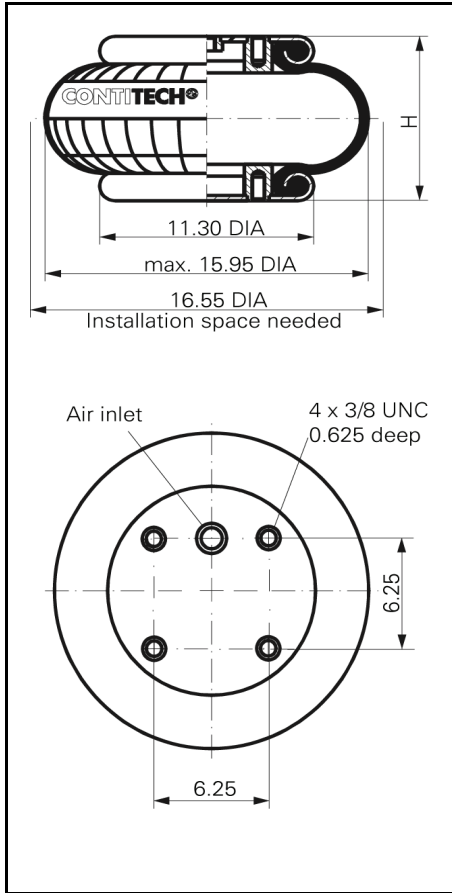


Service instructions

3/8 = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 530-14 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	3920	5880	7840	9800	11760		750
Spring rate [lbs/in]	1916	2604	3364	4061	4677		
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	758
	5	2240	4490	6730	8980	11220	674
	4	2470	4940	7410	9880	12350	586
	3	2610	5220	7830	10440	13050	483

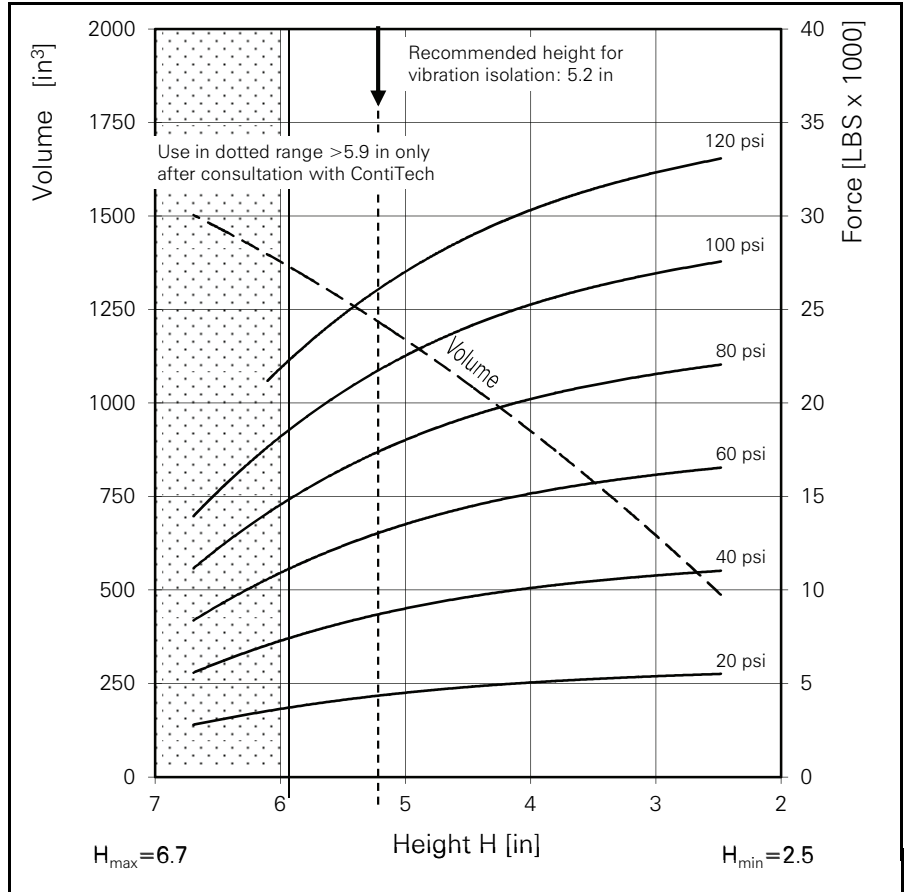
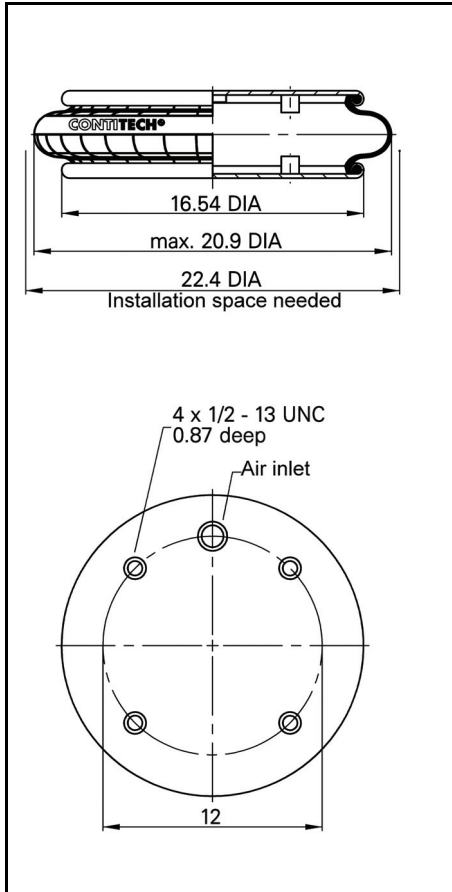


Service instructions

3/8-16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 1330-11 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 20 lbs
Overall weight with clamped plates	37.5 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5.2 inch, minimum 4.4 inch

Pressure p [psi]	40	60	80	100	120	Vol. V [in ³]
Force (Load) [lbs]	8780	13180	17570	21960	26350	1222
Spring rate [lbs/in]	4304	6159	7924	9356	10907	
Natural frequency [Hz]	2.2	2.2	2.1	2.1	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]	6	3630	7260	10890	14520	18150	21770	1384
	5	4500	9000	13500	18000	22500	27000	1174
	4	5050	10100	15140	20190	25240	30290	918
	3	5390	10780	16170	21570	26960	32350	642

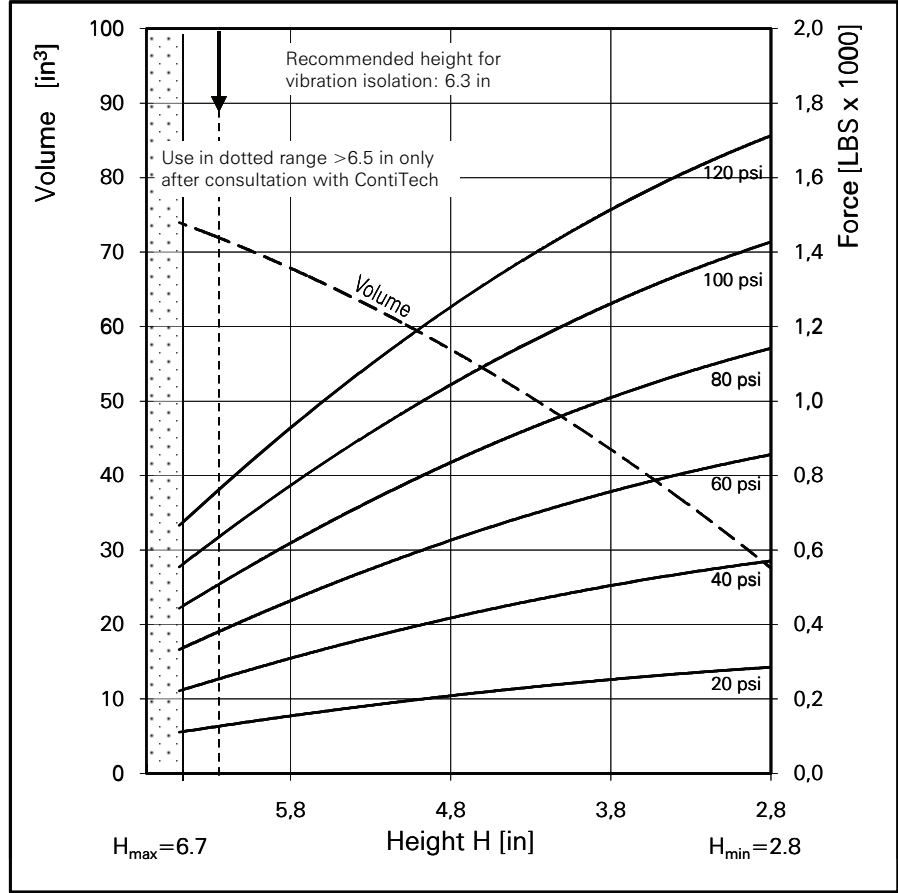
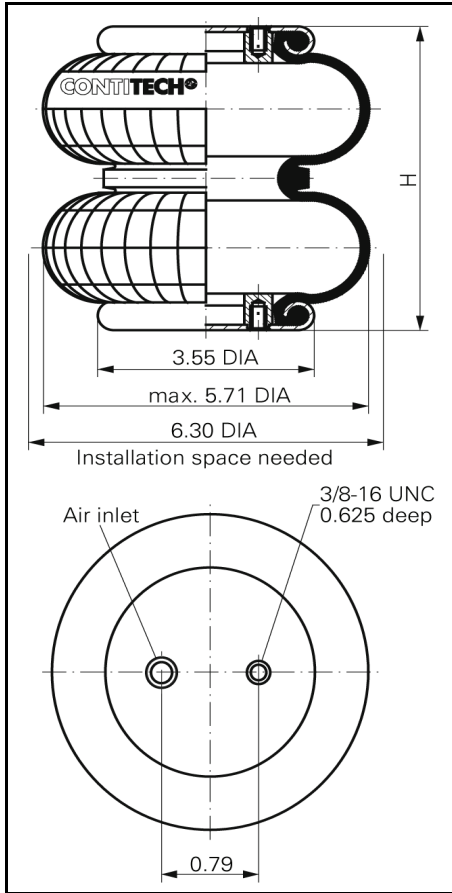


Service instructions

1/2-13 UNF = 55-65 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 40-10 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	250	370	490	620	740		73
Spring rate [lbs/in]	178,5	265,7	365,3	464	561		
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 [in ³]
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

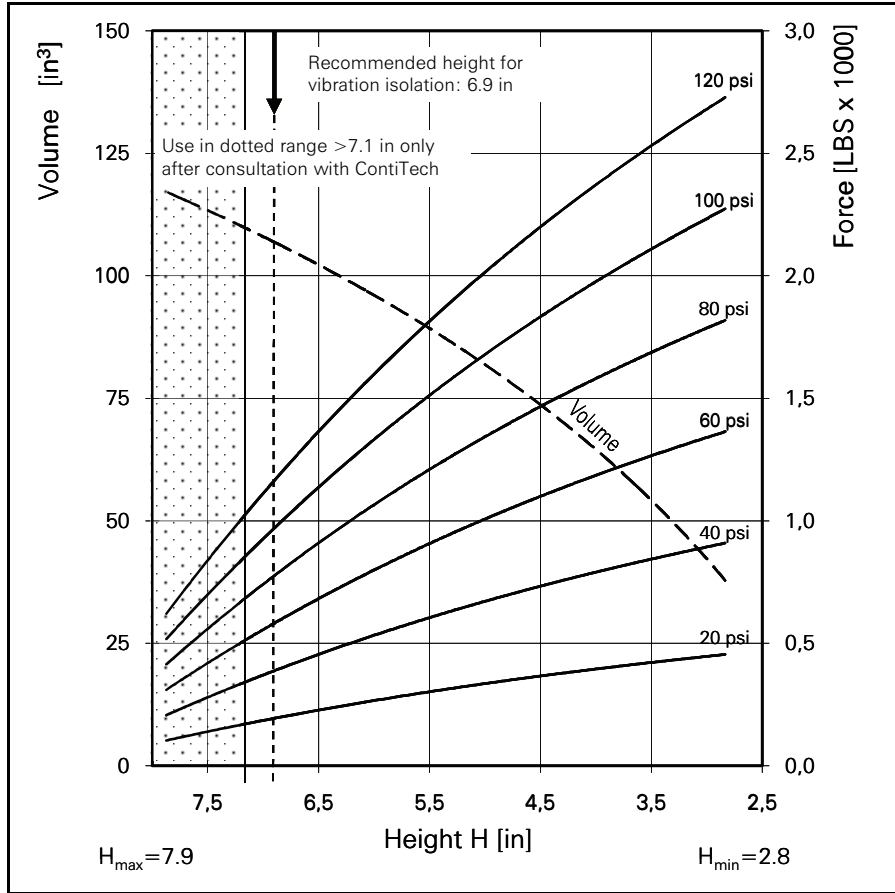
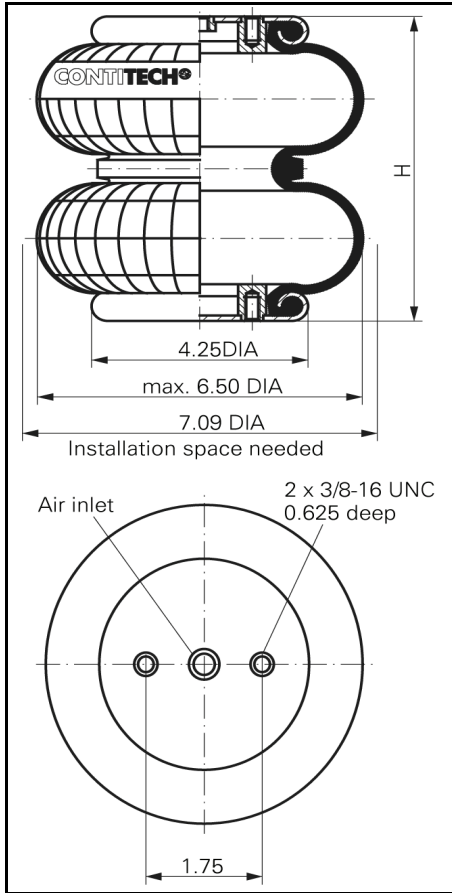


Service instructions

3/8-16 UNC = 15-20 LBxFT

1/8 NPT = 12-15 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 70-13 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only



Service instructions

3/8-16 UNC = 15-20 LBxFT

1/4 NPT = 12-15 LBxFT

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

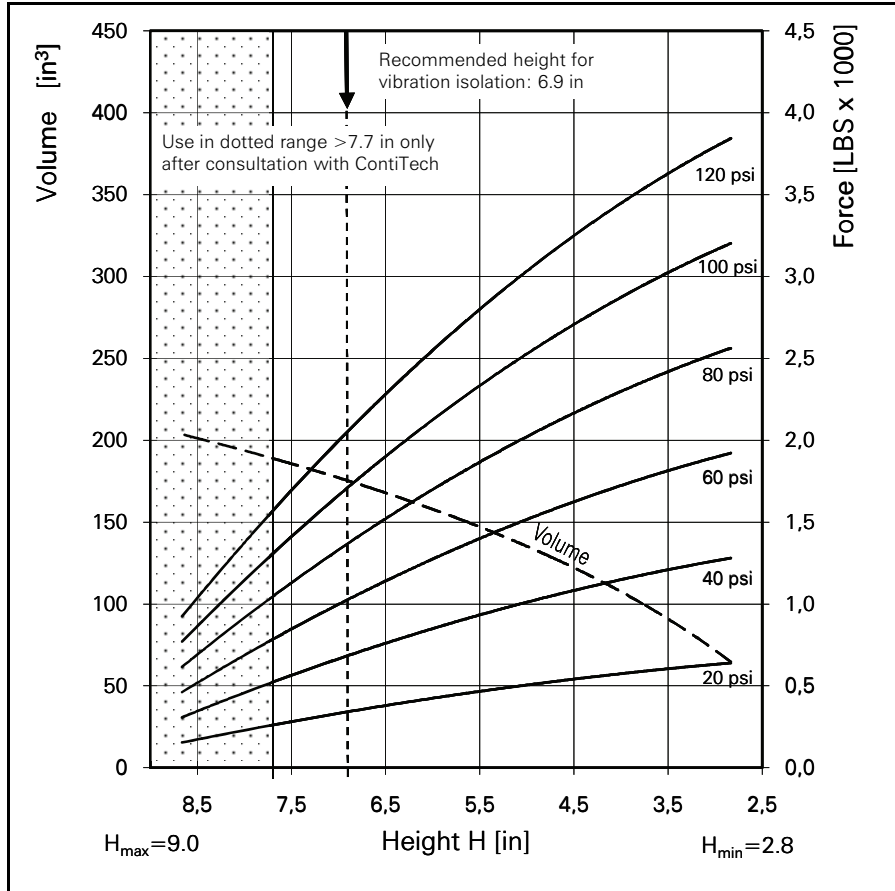
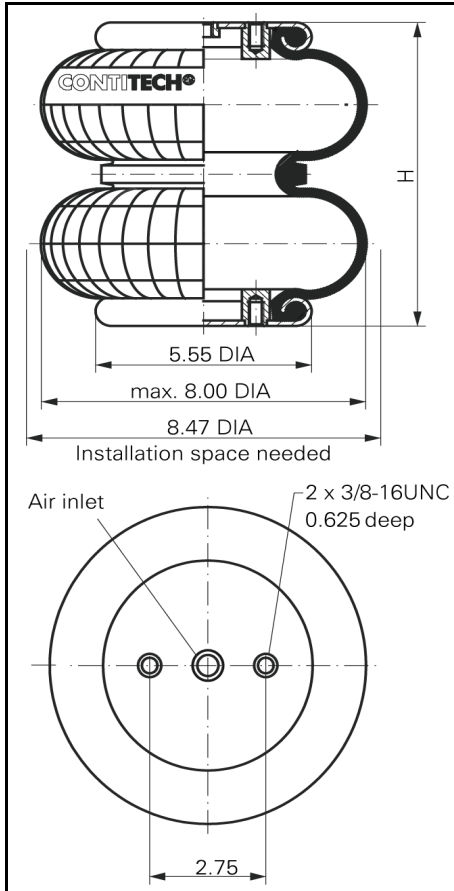
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	390	590	780	980	1170		107
Spring rate [lbs/in]	241	351	460	560	664		
Natural frequency [Hz]	2.6	2.6	2.5	2.5	2.5		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	7	190	380	560	750	940	1130	108
	6	270	530	800	1070	1330	1600	93
	5	330	670	1000	1330	1660	2000	84
	4	400	790	1190	1590	1980	2380	68
	3	440	890	1330	1780	2220	2670	40

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz




FD 110-15 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

 Service instructions
 3/8-16 UNC = 15-20 LBxFT
 1/4 NPT = 12-15 LBxFT
 3/4 NPT = 40-50 LBxFT

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

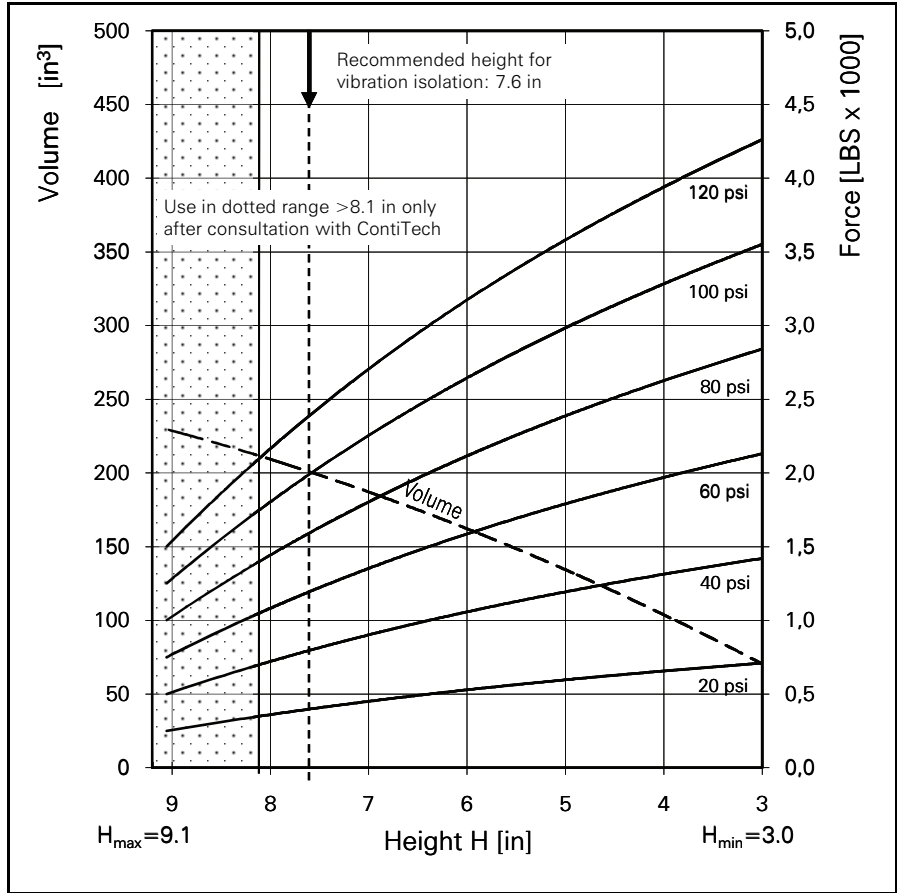
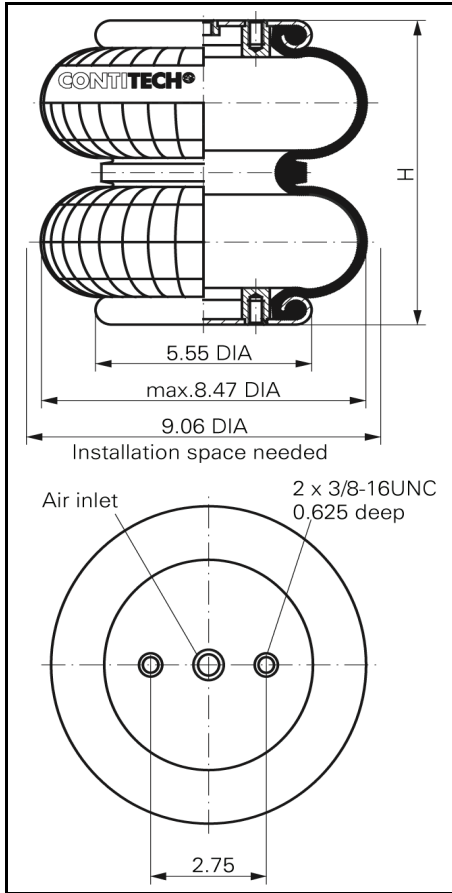
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	700	1040	1390	1740	2090		173
Spring rate [lbs/in]	354	526	699	827	989		
Natural frequency [Hz]	2.3	2.2	2.2	2.2	2.1		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	7.0	340	670	1010	1340	1680	2010	176
	6.0	430	850	1280	1710	2130	2560	158
	5.0	500	1000	1510	2010	2510	3010	133
	4.0	570	1150	1720	2300	2870	3440	107
	3.0	630	1270	1900	2530	3160	3800	73

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 120-17 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only



Service instructions

3/8-16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

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

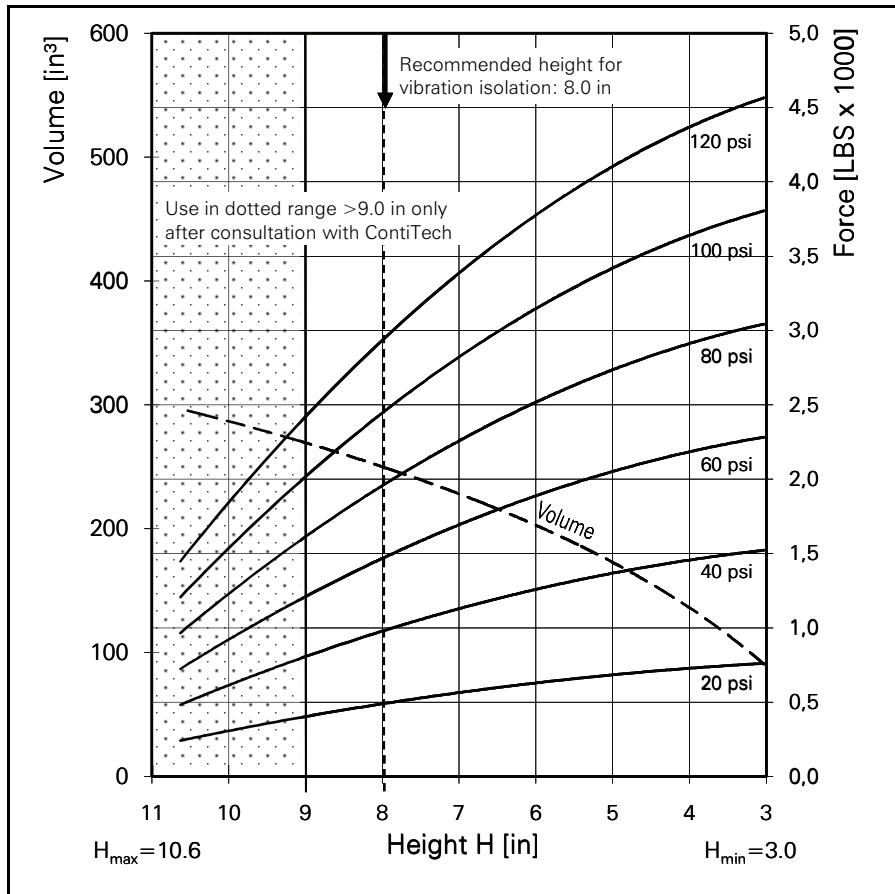
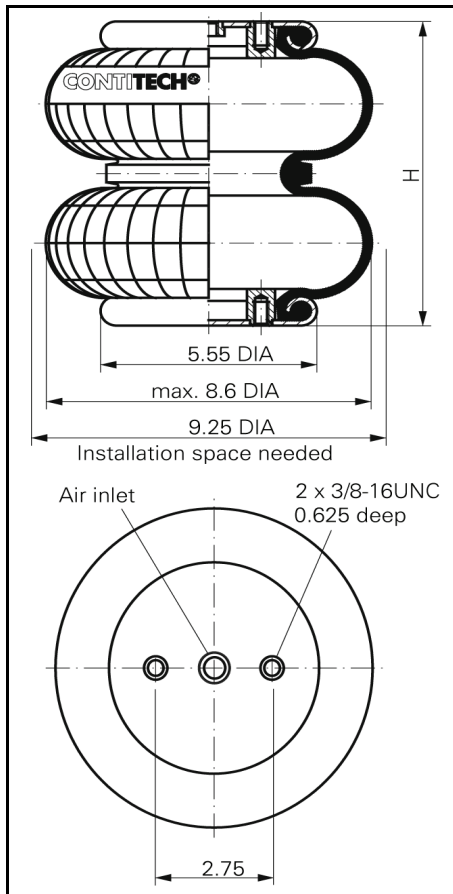
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	800	1200	1600	2000	2390		200
Spring rate [lbs/in]	315	490	668	855	1033		
Natural frequency [Hz]	2.1	2.0	2.0	2.0	2.0		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	8	360	720	1090	1450	1810	2170	209
	7	450	900	1350	1800	2250	2700	186
	6	530	1050	1580	2110	2640	3160	163
	5	600	1190	1790	2390	2980	3580	136
	4	660	1320	1980	2640	3300	3960	102
	3	710	1420	2120	2830	3540	4250	71

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 120-20 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only



Service instructions

3/8-16 UNC = 15-20 LBxFT

1/4 NPT = 10-12 LBxFT

3/4 NPT = 40-50 LBxFT

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

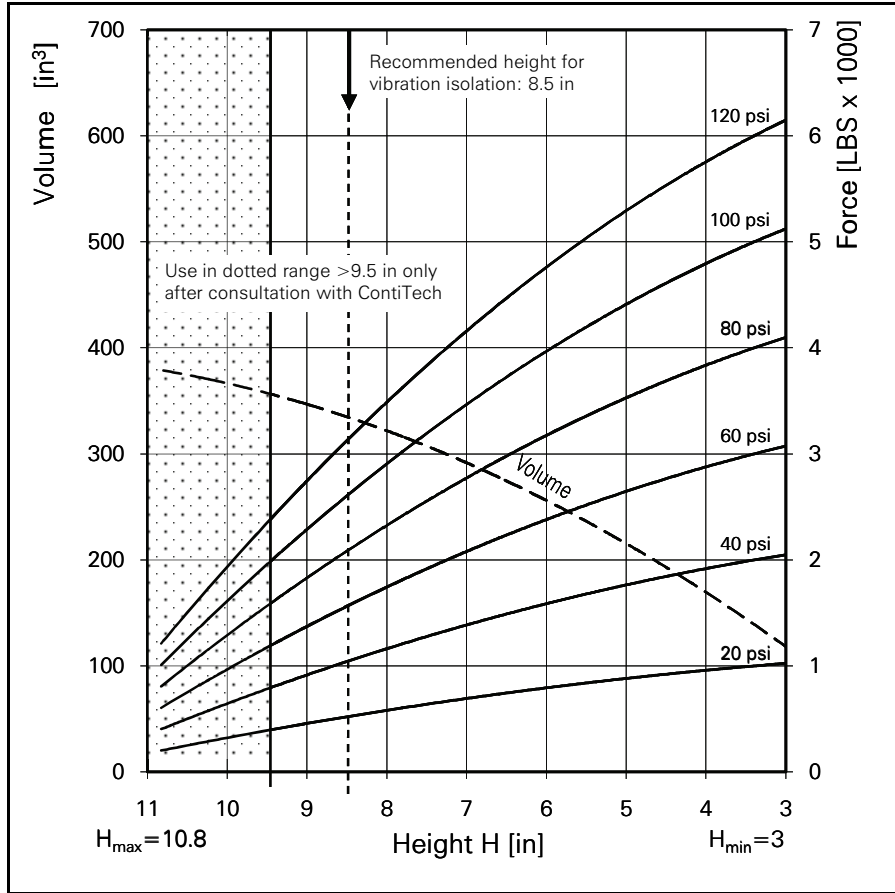
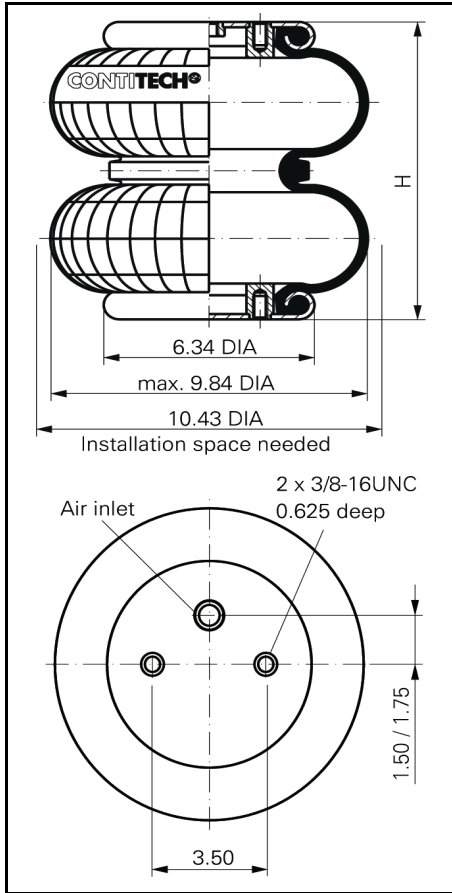
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	970	1450	1940	2420	2910		250
Spring rate [lbs/in]	341	496	649	782	910		
Natural frequency [Hz]	1.8	1.8	1.8	1.8	1.8		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	9.0	400	800	1200	1610	2010	2410	270
	8.0	480	970	1450	1940	2420	2910	250
	7.0	560	1120	1680	2230	2790	3350	228
	6.0	630	1260	1890	2530	3160	3790	197
	5.0	690	1380	2070	2760	3450	4140	166
	4.0	730	1460	2200	2930	3660	4390	135

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 200-19 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	1040	1560	2080	2600	3120		333
Spring rate [lbs/in]	417	608	797	976	1163		
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	352
	8	580	1160	1740	2320	2900	325
	7	690	1380	2070	2770	3460	290
	6	790	1590	2380	3180	3970	256
	5	880	1760	2640	3530	4410	214
	4	960	1930	2890	3850	4820	168
	3	1020	2040	3060	4080	5100	119

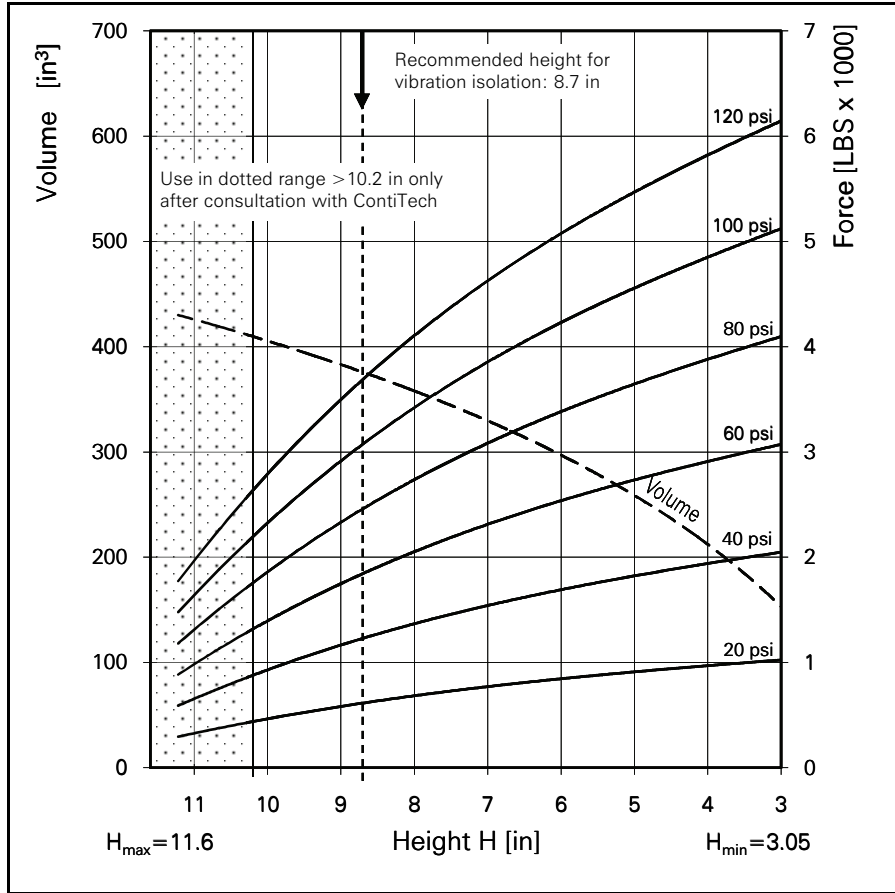
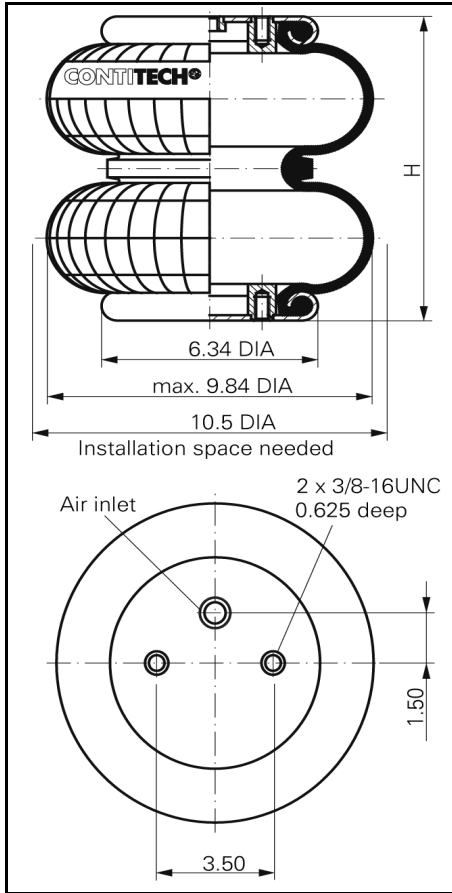


Service instructions

3/8-16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 200-22 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 45 lbs
Overall weight with clamped plates	7.2 lbs

Vibration isolation - dynamic characteristic values


Design height H: recommended 8.7 inch, minimum 8.1 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	1270	1910	2540	3180	3810		365
Spring rate [lbs/in]	393,7	566,9	699,2	849,2	1022		
Natural frequency [Hz]	1.8	1.7	1.7	1.6	1.6		

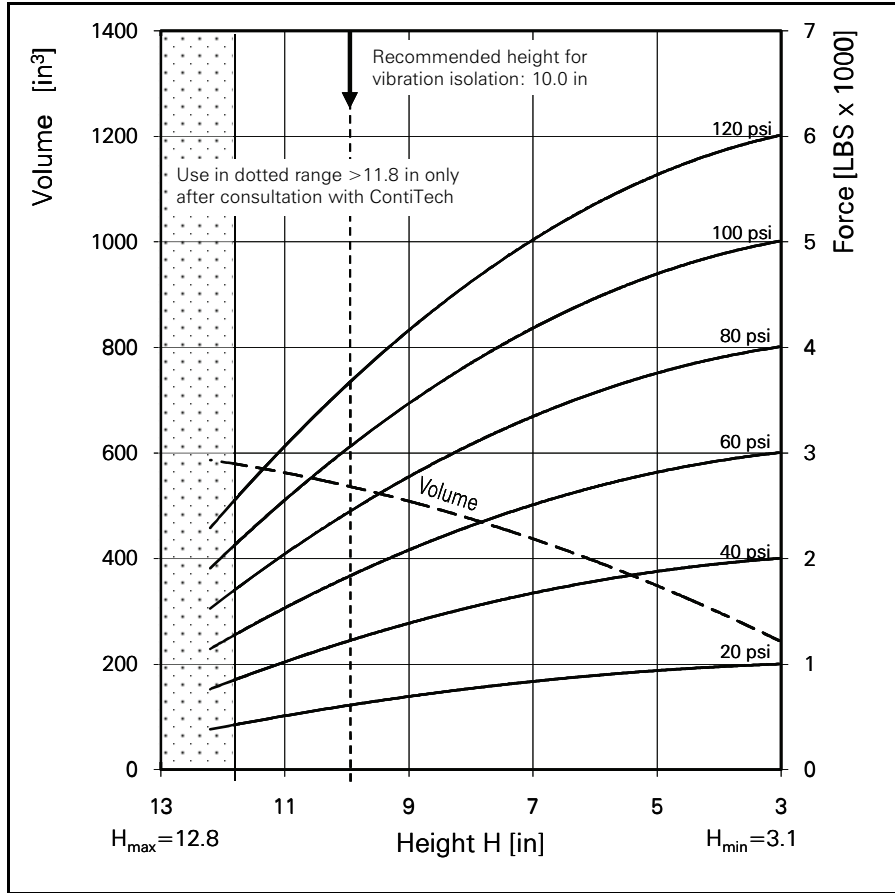
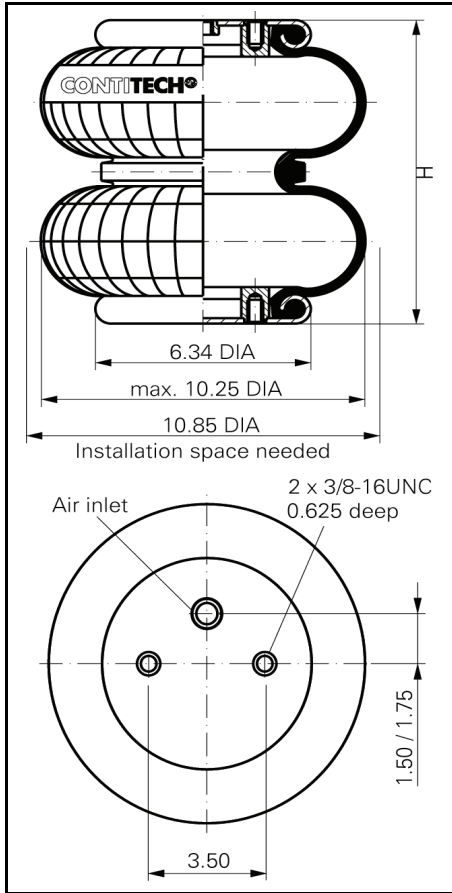
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	10	490	980	1470	1950	2440	2930	403
	8	700	1410	2110	2820	3520	4230	344
	6	850	1710	2560	3410	4270	5120	275
	4	980	1970	2950	3940	4920	5900	195

 Service instructions
 3/8-16 UNC = 15-20 LBxFT
 3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 200-25 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Additional types on request



Service instructions

3/8-16UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

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

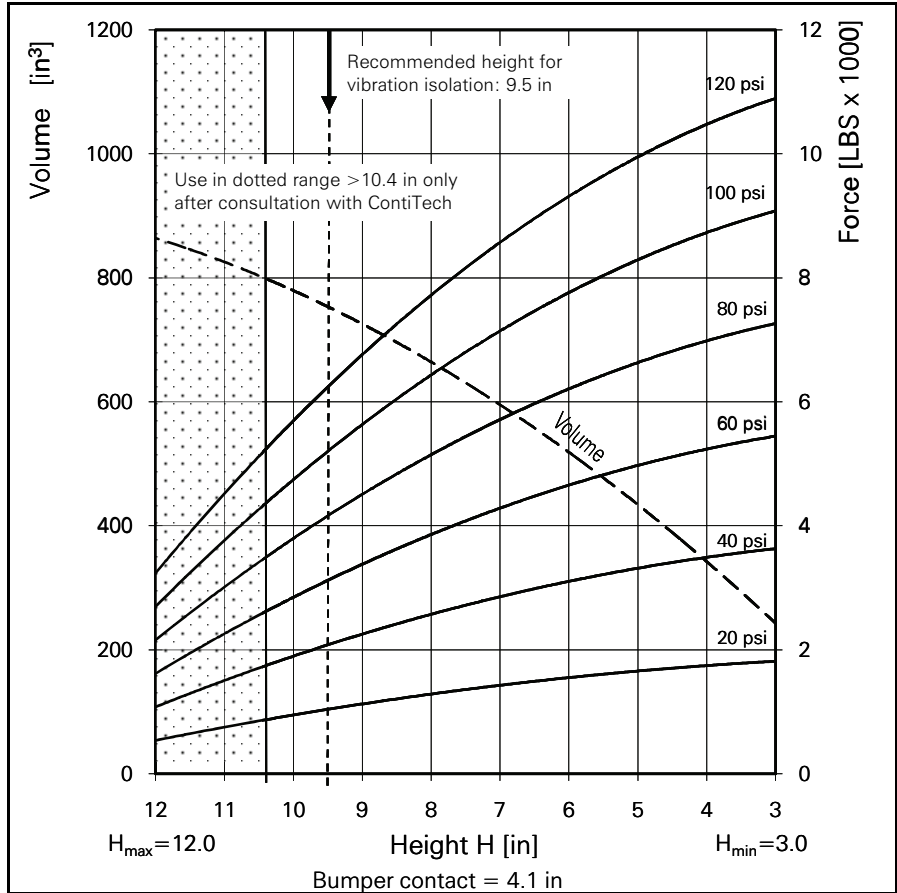
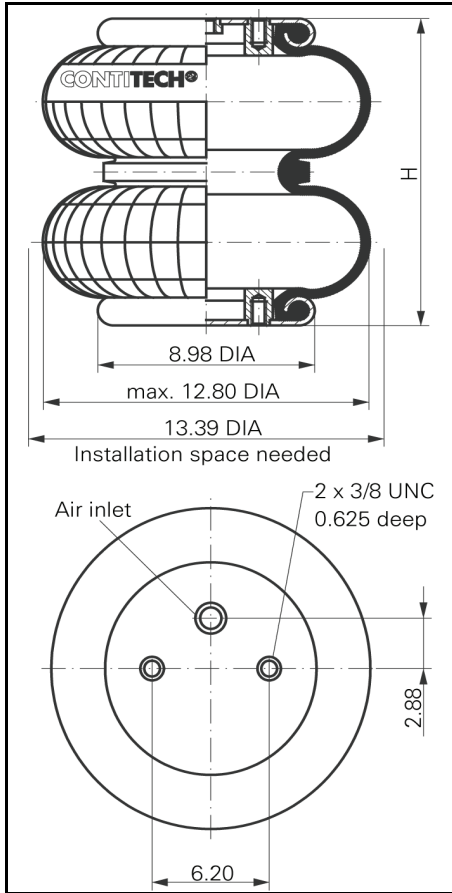
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	1220	1830	2440	3050	3660		538
Spring rate [lbs/in]	383	549	756	934	1087		
Natural frequency [Hz]	1.8	1.8	1.7	1.7	1.7		

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	563
	10	610	1220	1830	2440	3050	3660	538
	9	700	1400	2100	2800	3500	4200	510
	8	770	1530	2300	3070	3830	4600	474
	7	840	1670	2510	3340	4180	5010	437
	6	890	1780	2670	3560	4440	5330	396
	5	930	1870	2800	3740	4670	5610	346

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 330-22 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	2100	3150	4200	5250	6300		754
Spring rate [lbs/in]	835	1122	1392	1592	1854		
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. V [in ³]
Height H [in]	10	960	1910	2870	3820	4780	780
	8	1280	2560	3850	5130	6410	665
	6	1550	3090	4640	6180	7730	518
	5	1650	3310	4960	6620	8270	433
	4	1750	3500	5250	6990	8740	340
	3	1820	3630	5450	7270	9080	247

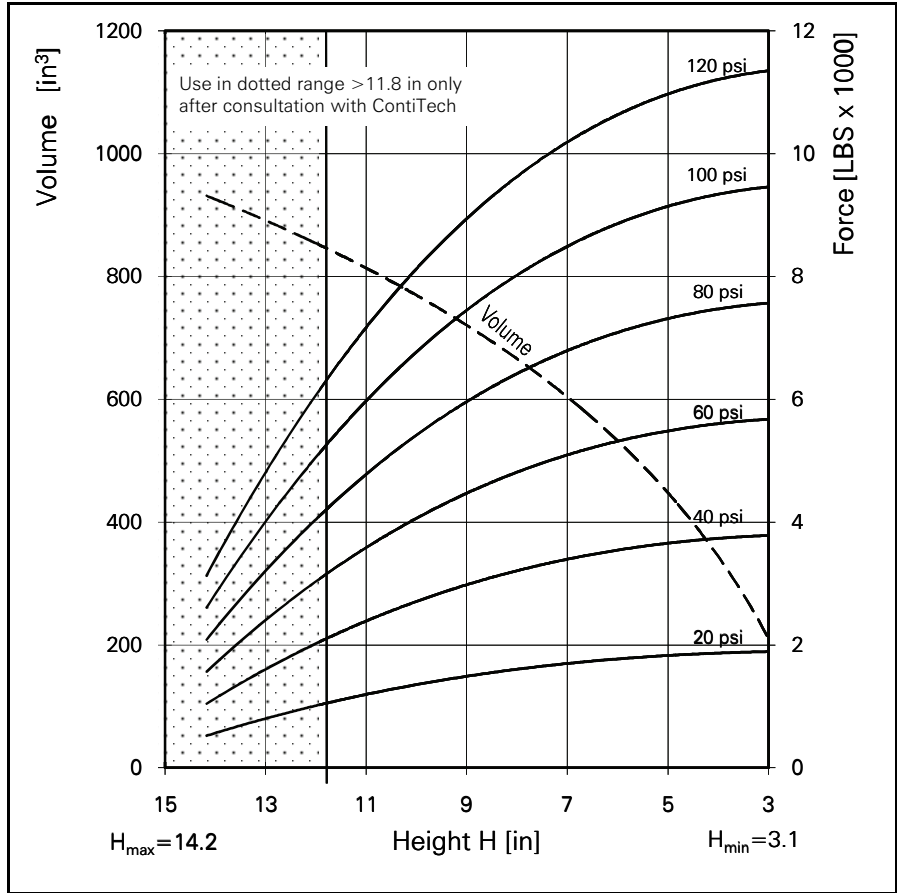
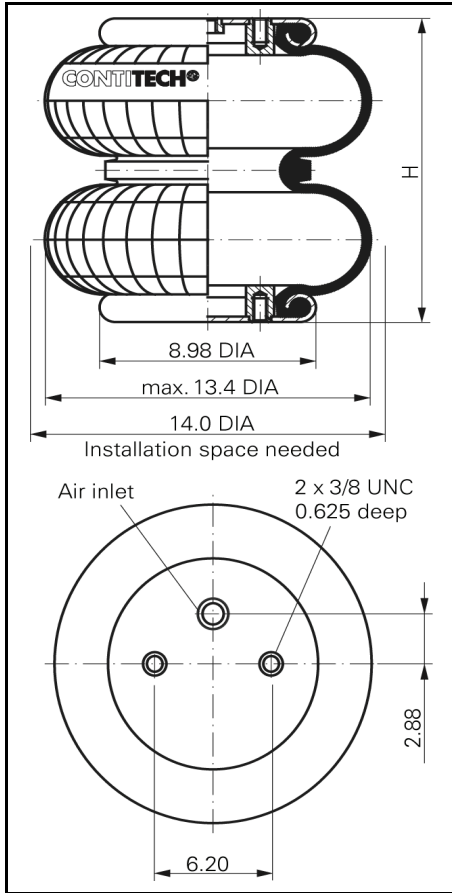


Service instructions

3/8-16UNC = 15-20 LBxFT

1/4 NPT = 15-20 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 330-30 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 67 lbs
Overall weight with clamped plates	11.7 lbs



Service instructions

3/8-16UNC = 15-20 LBxFT

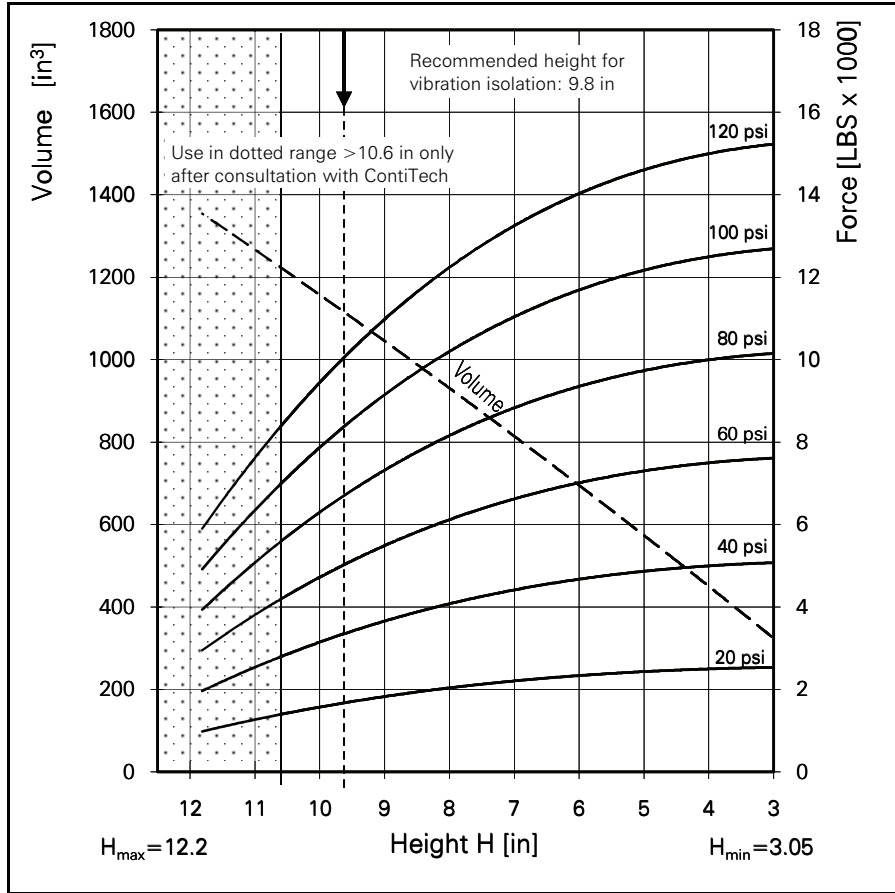
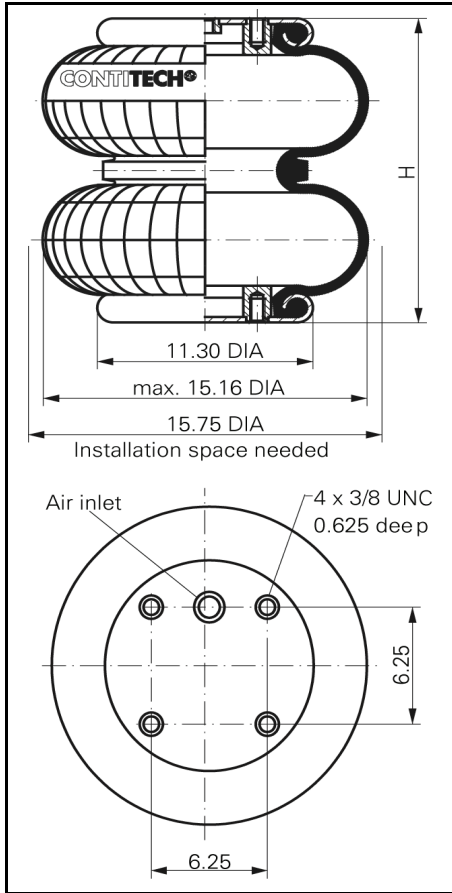
3/4 NPT = 40-50 LBxFT

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol. V [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

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 530-22 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 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. V [in ³]
Force (Load) [lbs]	3270	4900	6530	8170	9800		1132
Spring rate [lbs/in]	1168	1689	2201	2680	3189		
Natural frequency [Hz]	1.9	1.8	1.8	1.8	1.8		

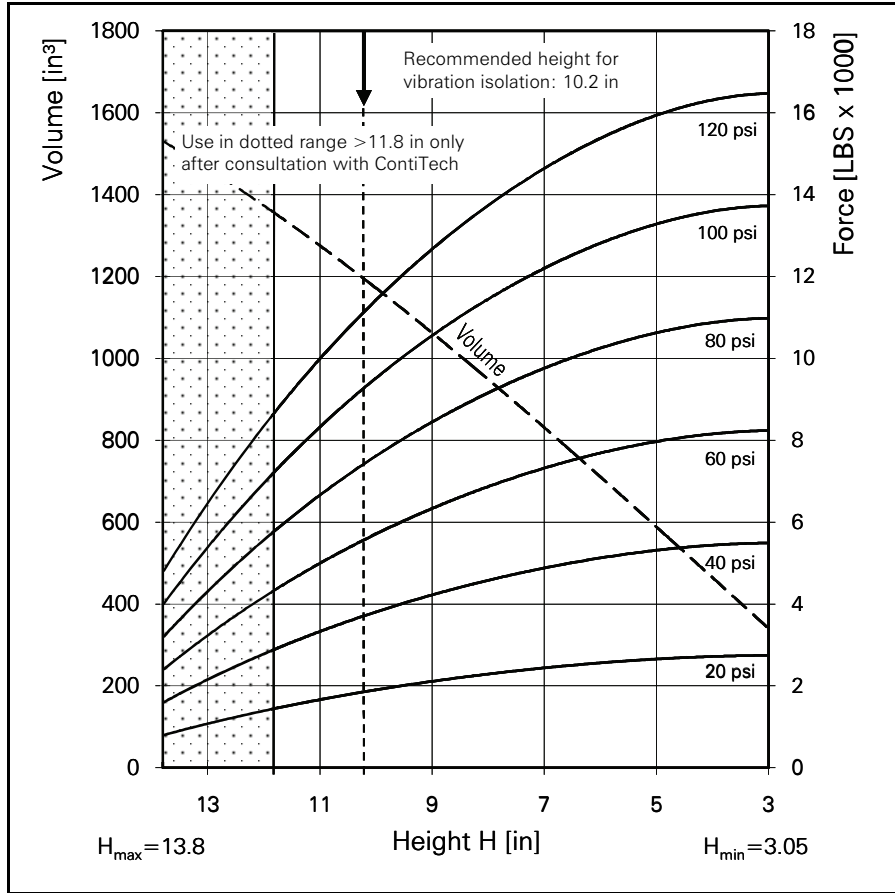
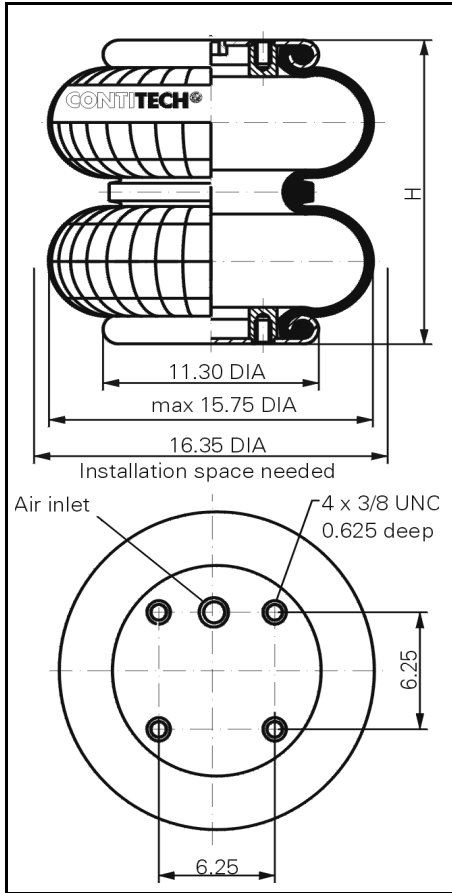
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	10	1580	3160	4740	6320	7900	1159
	8	2030	4050	6080	8100	10130	930
	6	2340	4680	7020	9370	11710	697
	4	2500	5000	7500	10000	12500	447

 Service instructions
 3/8-16UNC = 15-20 LBxFT
 3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 530-30 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 lbs
Overall weight with clamped plates	16.2 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 10.2 inch, minimum 9.6 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	3740	5610	7480	9350	11220		1192
Spring rate [lbs/in]	987	1388	1811	2165	2628		
Natural frequency [Hz]	1.6	1.6	1.6	1.5	1.5		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	11	1660	3330	4990	6650	8320	1273
	9	2100	4210	6310	8410	10520	1069
	7	2440	4880	7320	9760	12200	842
	5	2650	5310	7960	10620	13270	579

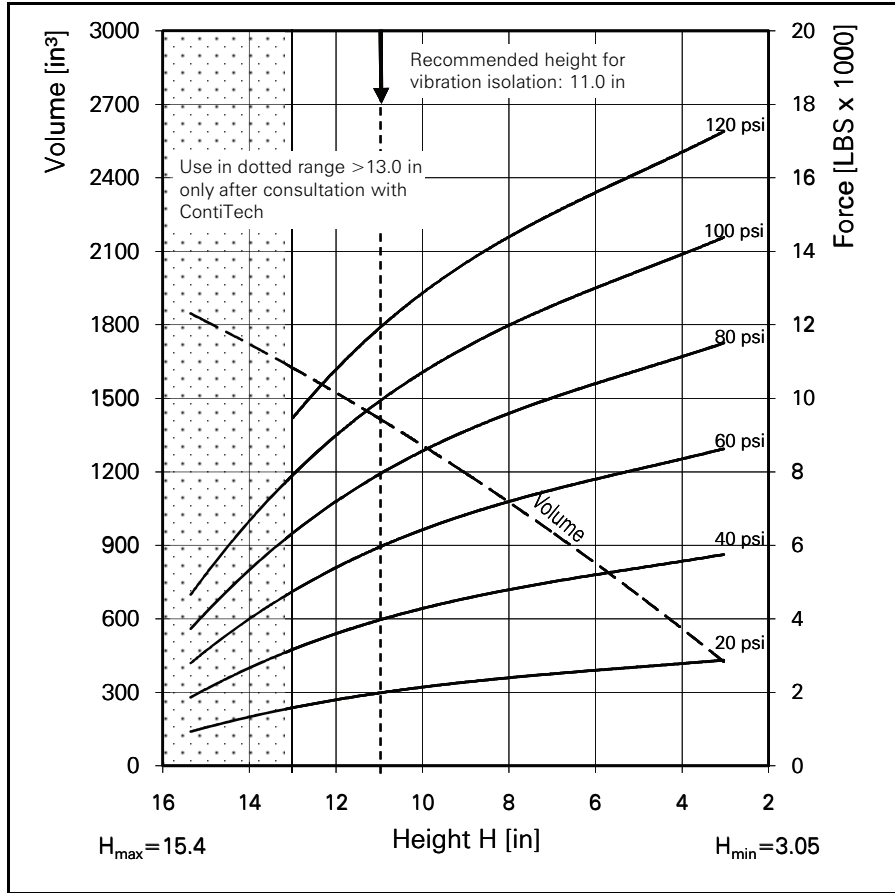
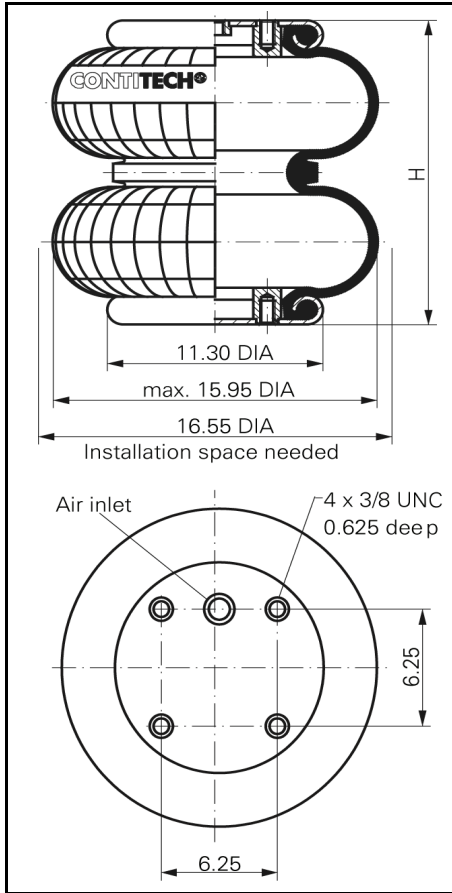


Service instructions

3/8-16UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 530-35 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

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. V [in ³]
Force (Load) [lbs]	3960	5950	7930	9910	11890		1410
Spring rate [lbs/in]	929	1329	1701	2047	2421		
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	1628
	11	1980	3960	5950	7930	9910	1411
	9	2270	4550	6820	9090	11370	1199
	7	2500	5010	7510	10020	12520	952
	5	2690	5370	8060	10750	13430	694

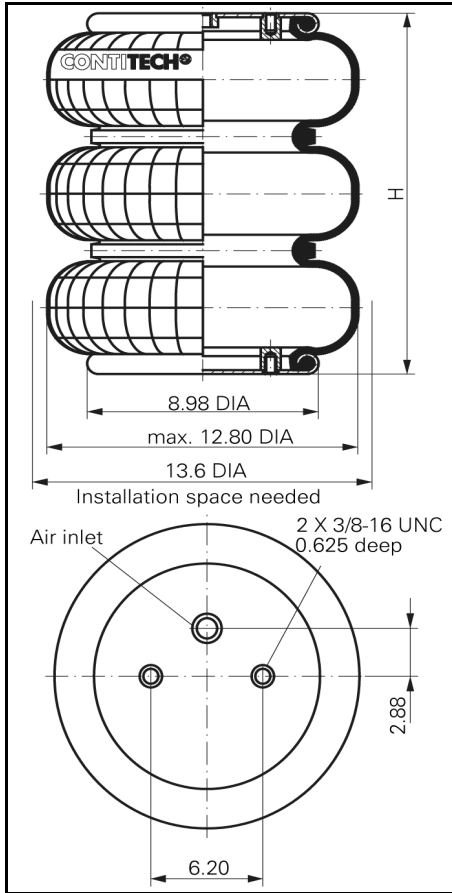


Service instructions

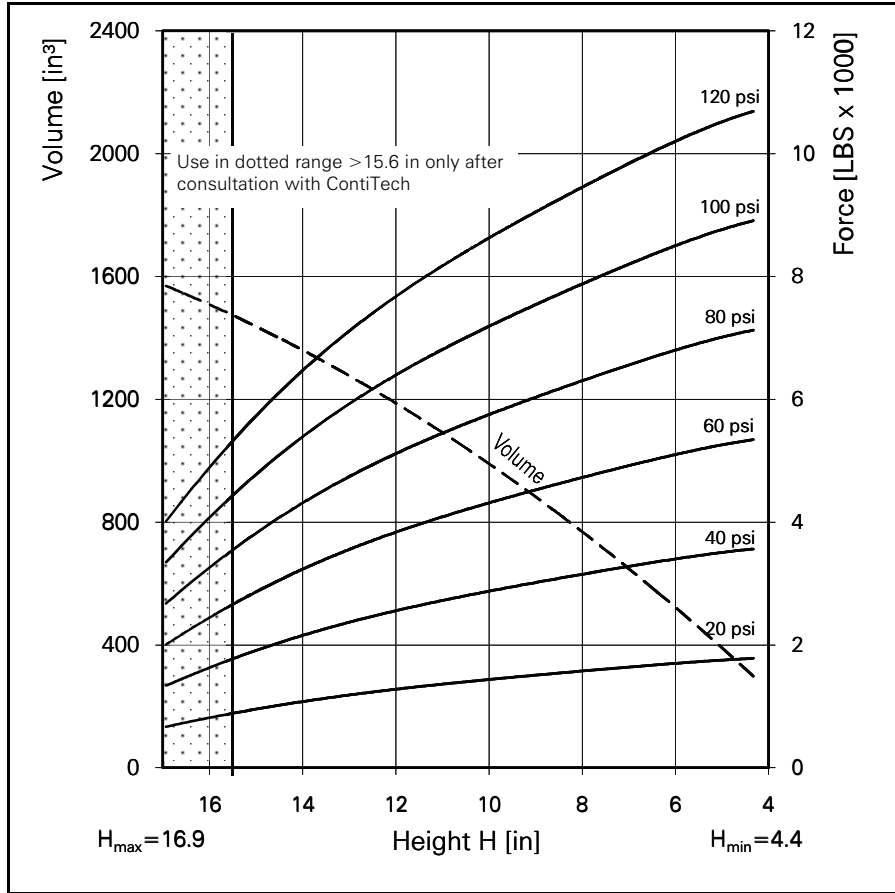
3/8-16 UNC = 15-20 LBxFT

3/4 NPT = 40-50 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FT 330-29 01



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 lbs
Overall weight with clamped plates	13.1 lbs



Service instructions

3/8-16 UNC = 15-20 LBxFT

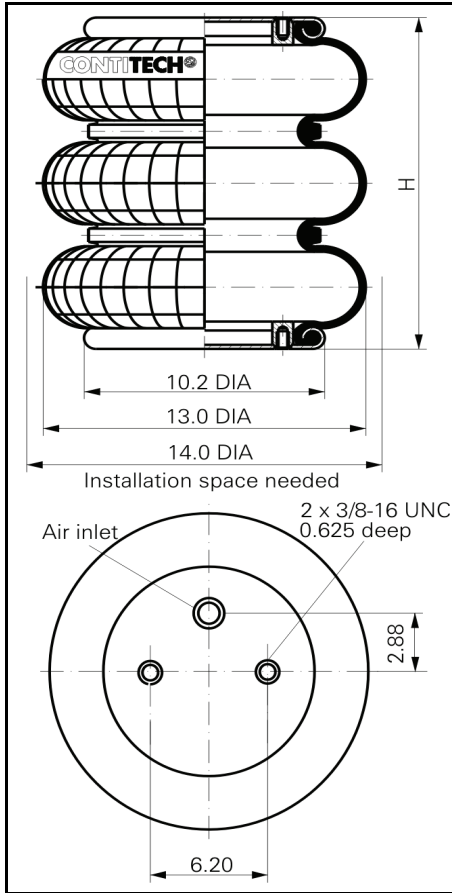
3/4 NPT = 40-50 LBxFT

Pneumatic application - static characteristic values

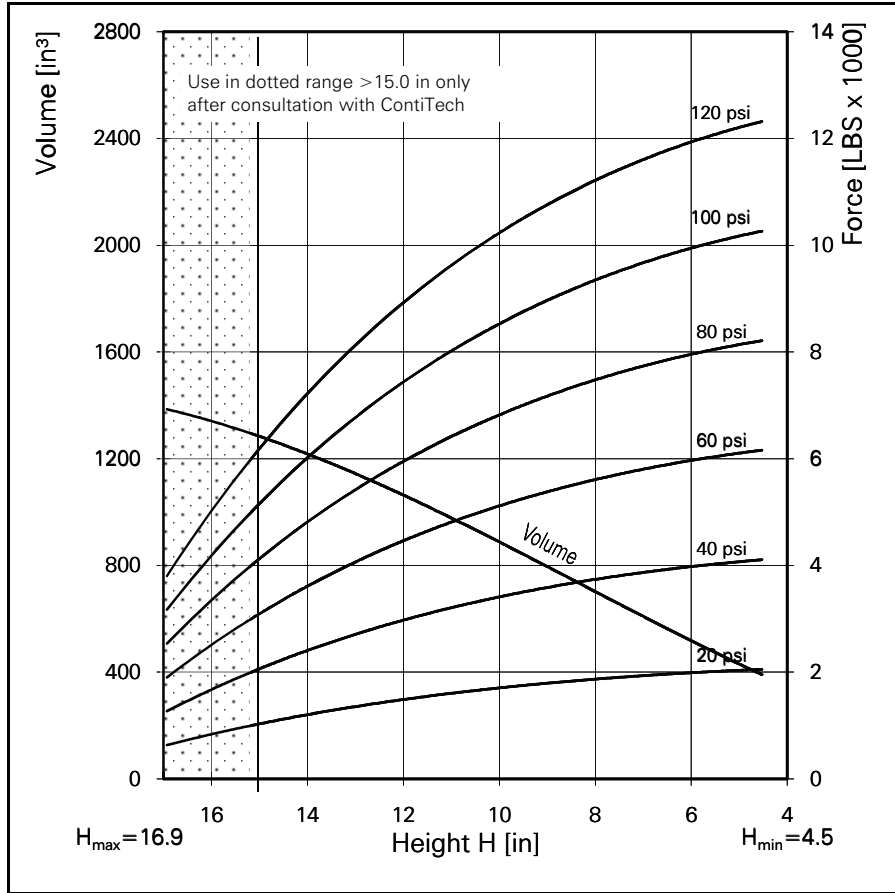
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	15	950	1900	2860	3810	4760	5710	1441
	13	1180	2360	3540	4730	5910	7090	1281
	11	1360	2720	4090	5450	6810	8170	1089
	9	1500	3010	4510	6010	7520	9020	878
	7	1640	3290	4930	6580	8220	9860	642
	5	1750	3500	5250	7000	8750	10500	392

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FT 430-32 01



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 107 lbs
Overall weight with clamped plates	15 lbs



Service instructions

3/8-16 UNC = 15-20 LBxFT

1/4 NPT = 12-15 LBxFT

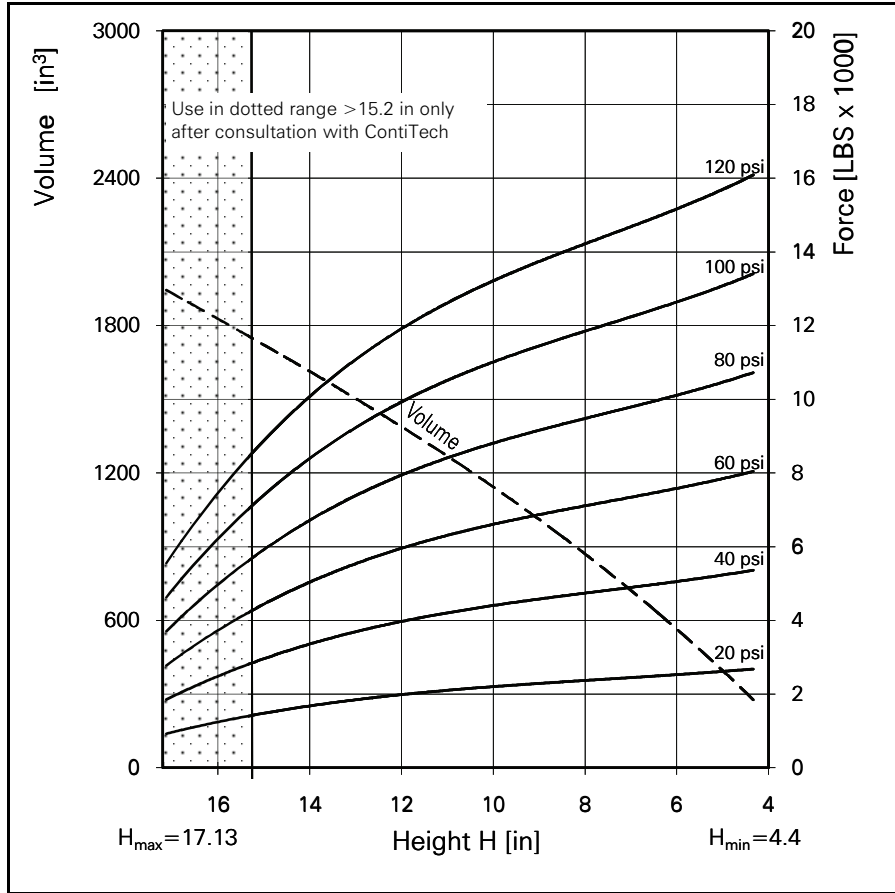
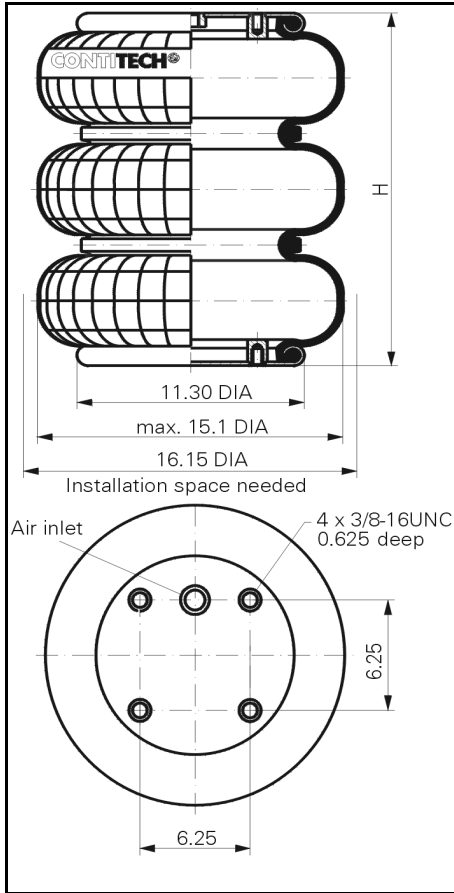
3/4 NPT = 40-50 LBxFT

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 12	1480	2960	4440	5920	7400	8880	1064
10	1710	3410	5120	6820	8530	10240	887
8	1870	3740	5610	7480	9340	11210	701
6	1980	3960	5950	7930	9910	11890	519
5	2030	4060	6100	8130	10160	12190	432

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FT 530-32 01

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 112 lbs
Overall weight with clamped plates	17.7 lbs



Service instructions

3/8-16UNC = 15-20 LBxFT

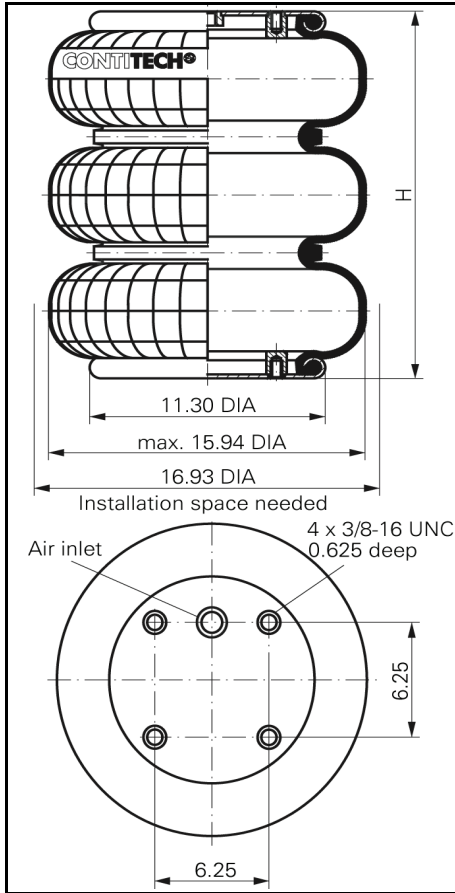
3/4 NPT = 40-50 LBxFT

Pneumatic application - static characteristic values

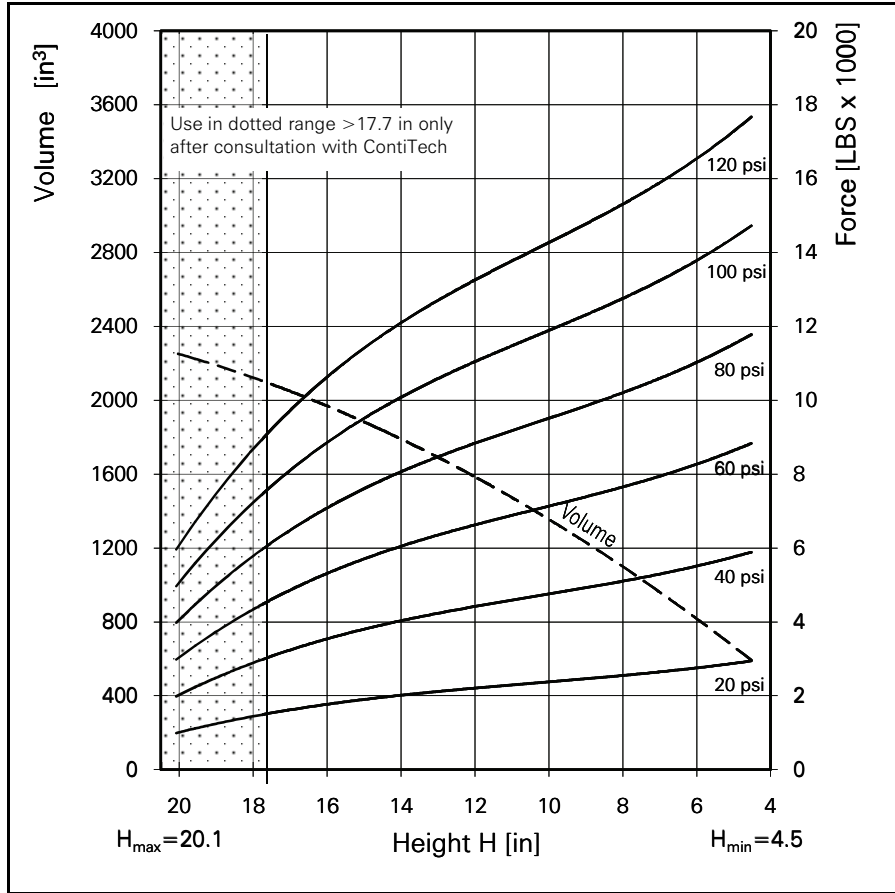
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	15	1480	2960	4440	5930	7410	8890	1719
	13	1830	3670	5500	7330	9170	11000	1508
	11	2100	4200	6300	8400	10500	12600	1272
	9	2290	4580	6860	9150	11440	13730	1007
	7	2450	4900	7360	9810	12260	14710	719
	5	2620	5240	7860	10480	13110	15730	384

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FT 530-35 01



Force-height diagram


Purchase order data

Port	
0	Bead Ring or Bellows Only
2	1/4 NPT
4	3/4 NPT

Option	
0	Standard
1	Internal Hard Stop
2	Chloroprene Rubber
3	Epichlorohydrin
4	High Pressure
5	Low Restoring Force
6	Stainless Steel
7	Tank Valve
8	Elastomer Bellows Only

Technical data

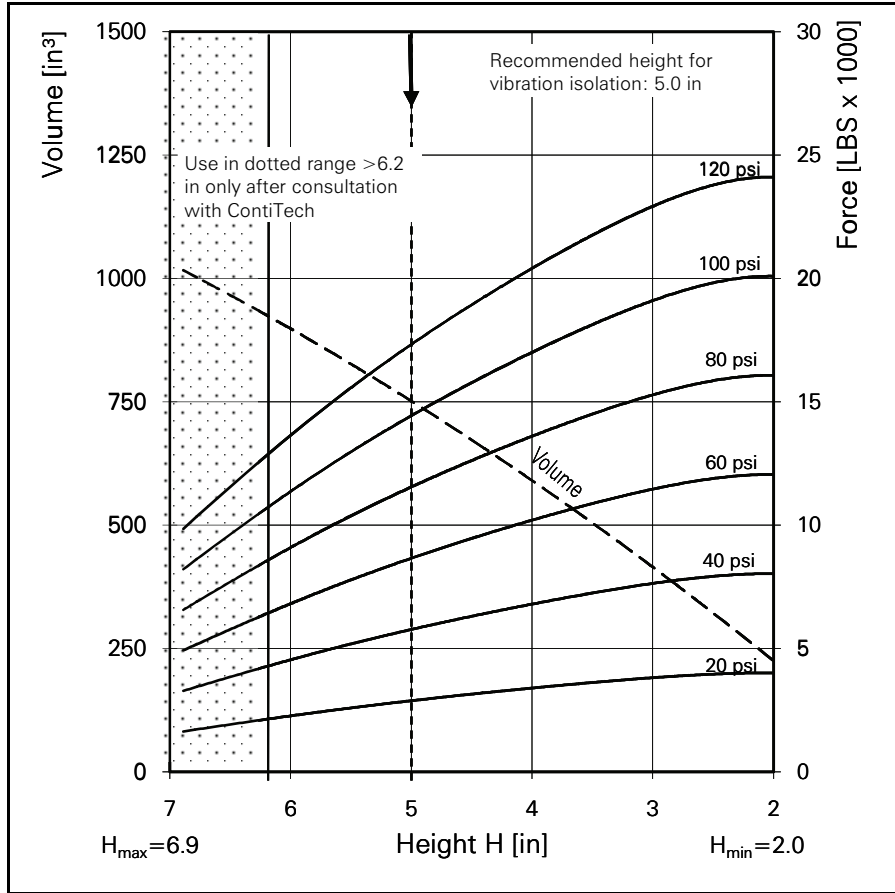
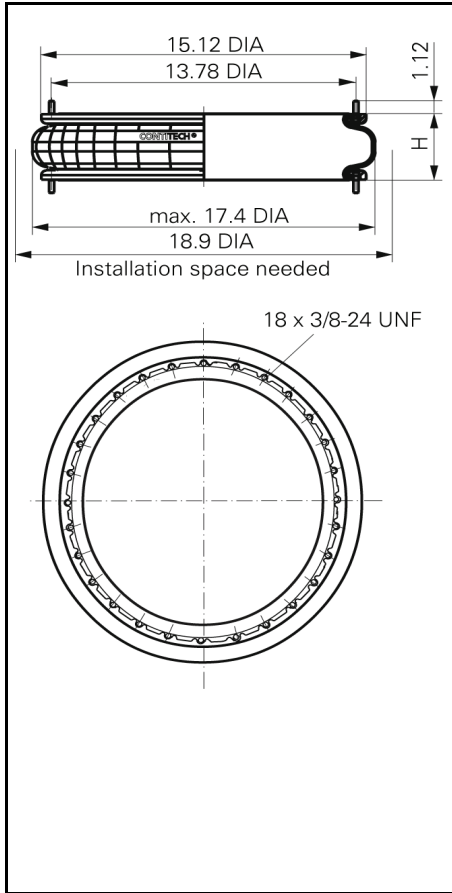
Min. pressure	0 psi
Return force to min. height	≤ 112 lbs
Overall weight with clamped plates	21 lbs

 Service instructions
 3/8-16 UNC = 15-20 LBxFT
 3/4 NPT = 40-50 LBxFT

Pneumatic application - static characteristic values

Force F [lbs]		20	40	60	80	100	120	Vol [in ³]
Pressure p [psi]	16	1760	3520	5280	7040	8800	10560	1991
	14	2000	4000	6010	8010	10010	12010	1797
	12	2220	4430	6650	8860	11080	13290	1574
	10	2390	4780	7170	9570	11960	14350	1342
	8	2550	5110	7660	10210	12770	15320	1096
	6	2740	5490	8230	10970	13710	16460	825
Height H [in]	16	1760	3520	5280	7040	8800	10560	1991
	14	2000	4000	6010	8010	10010	12010	1797
	12	2220	4430	6650	8860	11080	13290	1574
	10	2390	4780	7170	9570	11960	14350	1342
	8	2550	5110	7660	10210	12770	15320	1096
	6	2740	5490	8230	10970	13710	16460	825

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FS 960-12 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 22 lbs
Overall weight with bead rings, bolts, nuts and washers	11 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5 inch, minimum 4,33 inch

Pressure p	[psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load)	[lbs]	5780	8660	11550	14440	17330		754
Spring rate	[lbs/in]	3123	4529	5820	7176	8580		
Natural frequency	[Hz]	2.2	2.2	2.2	2.2	2.2		

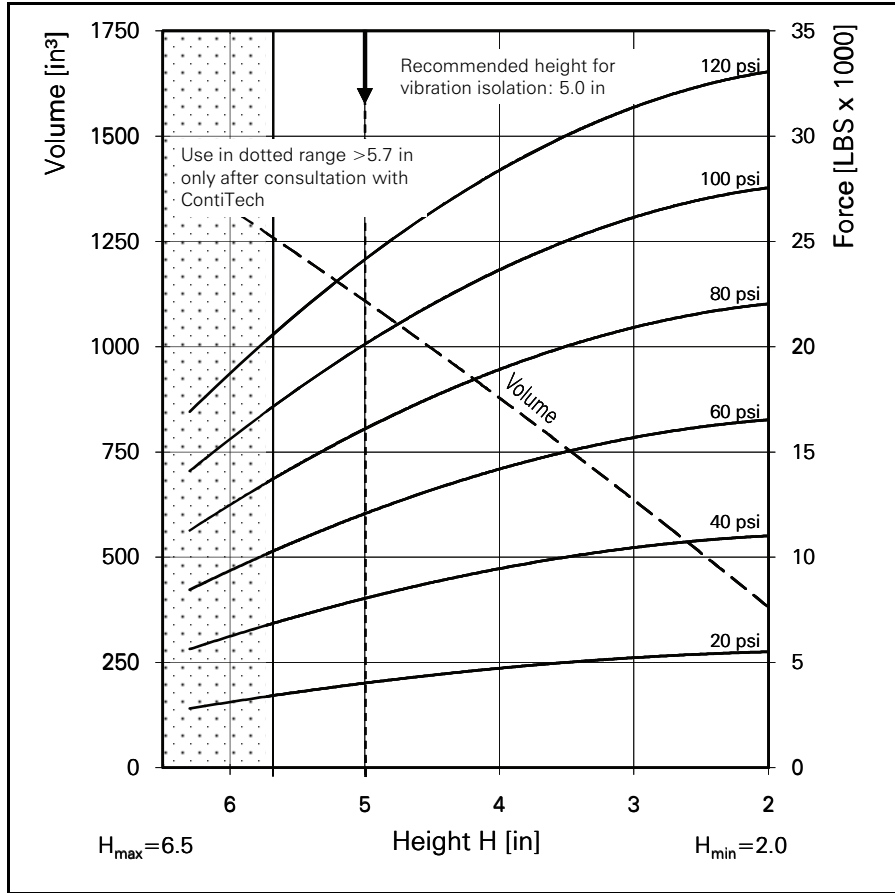
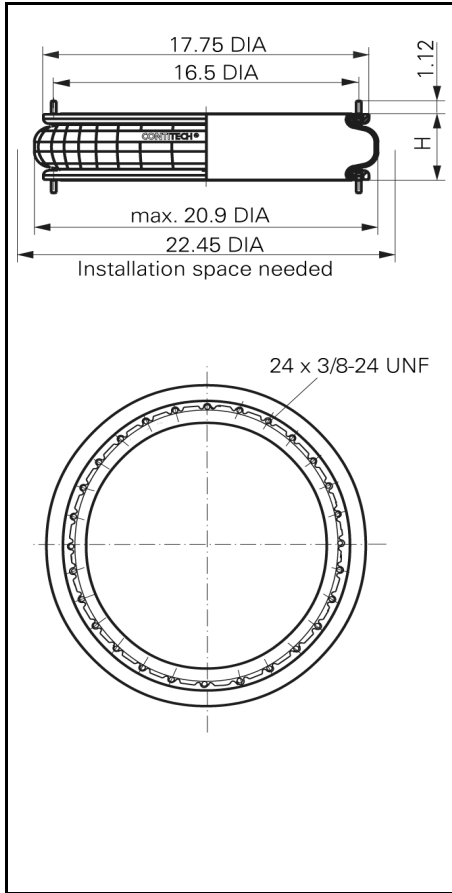
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p	[psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	6.0	2270	4530	6800	9070	11330	13600	899
	5.0	2890	5780	8660	11550	14440	17330	754
	4.0	3390	6780	10170	13570	16960	20350	591
	3.0	3820	7640	11460	15280	19100	22920	412

Service instructions
3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 1330-11 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 20 lbs
Overall weight with bead rings, bolts, nuts and washers	16.1 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5.0 inch, minimum 4.1 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	8040	12060	16080	20100	24120		1114
Spring rate [lbs/in]	4268	6218	8025	9932	11722		
Natural frequency [Hz]	2.2	2.2	2.2	2.2	2.2		

Pneumatic application - static characteristic values

Force F [lbs]

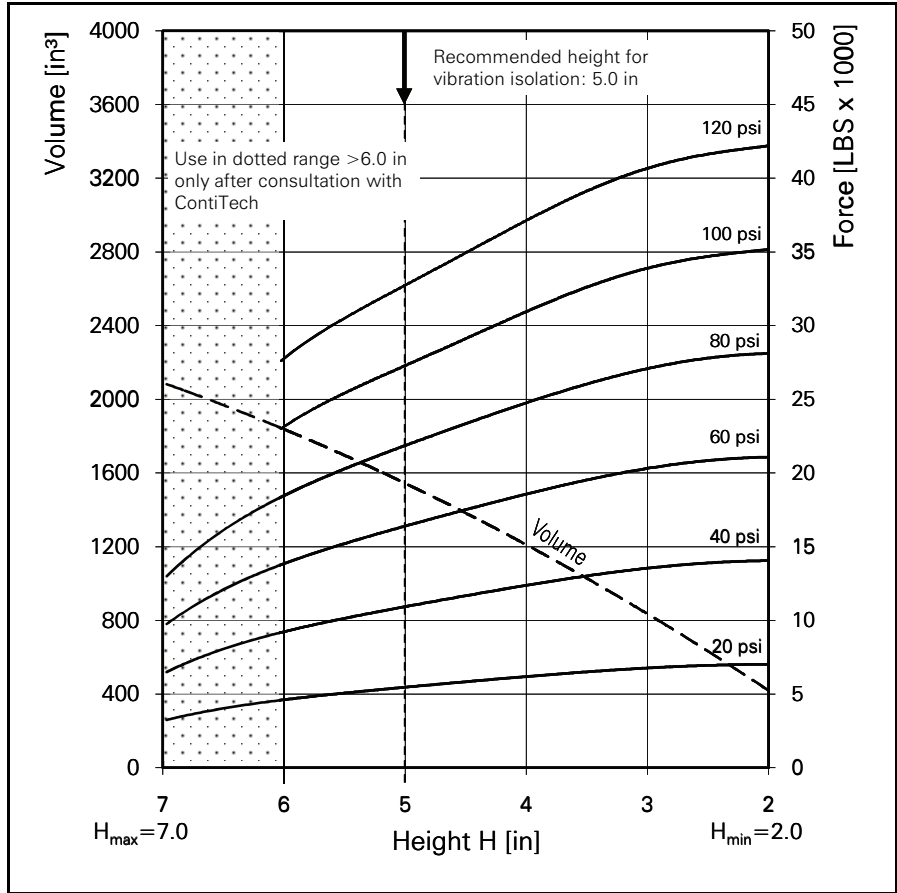
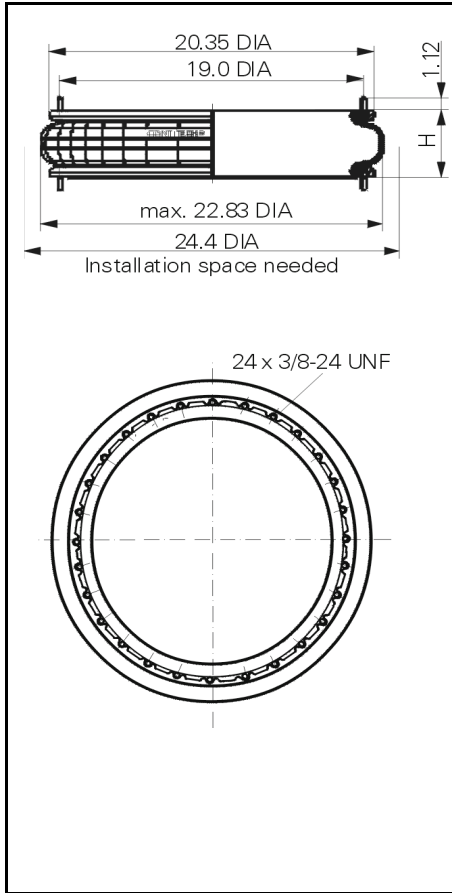
Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	5,5	3620	7230	10850	14470	18080	1224
	5	4020	8040	12060	16080	20100	1112
	4,5	4370	8740	13110	17480	21850	994
	4	4720	9440	14150	18870	23590	871
	3,5	5010	10030	15040	20050	25060	766
	3	5240	10480	15720	20970	26210	632



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 1710-12 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 27 lbs
Overall weight with bead rings, bolts, nuts and washers	19.2 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5 inch, minimum 4.33 inch

Pressure p	[psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load)	[lbs]	10900	16350	21800	27250	32700		1544
Spring rate	[lbs/in]	5349	7606	9770	12114	14456		
Natural frequency	[Hz]	2.2	2.2	2.1	2.1	2.1		

Pneumatic application - static characteristic values

Force F [lbs]

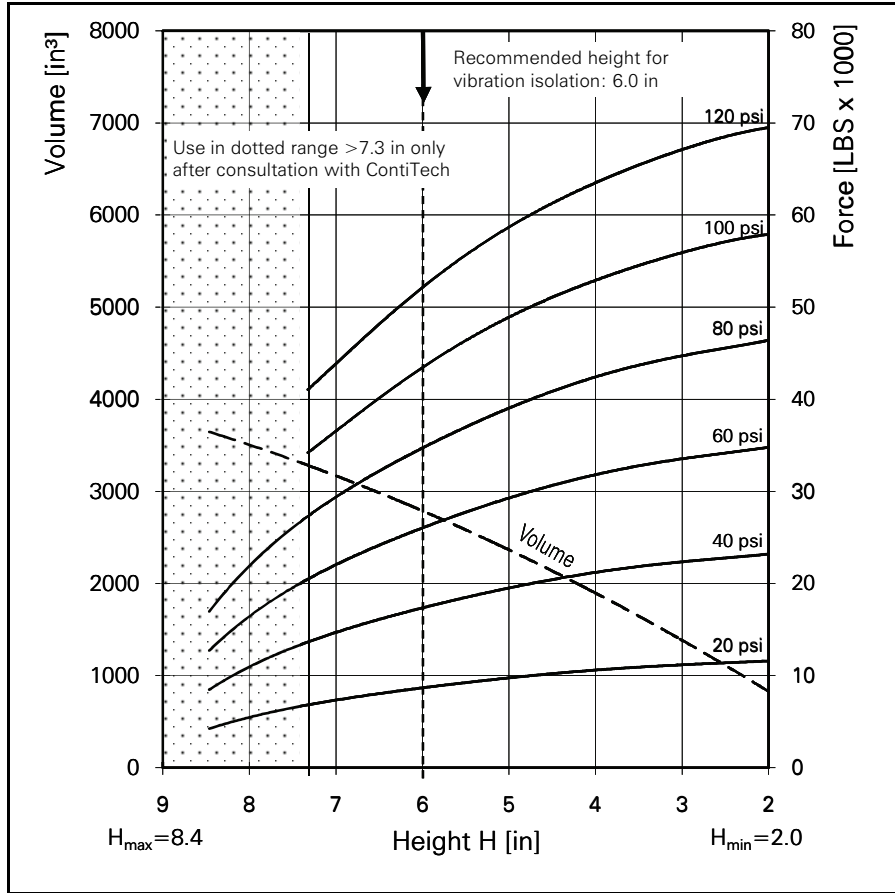
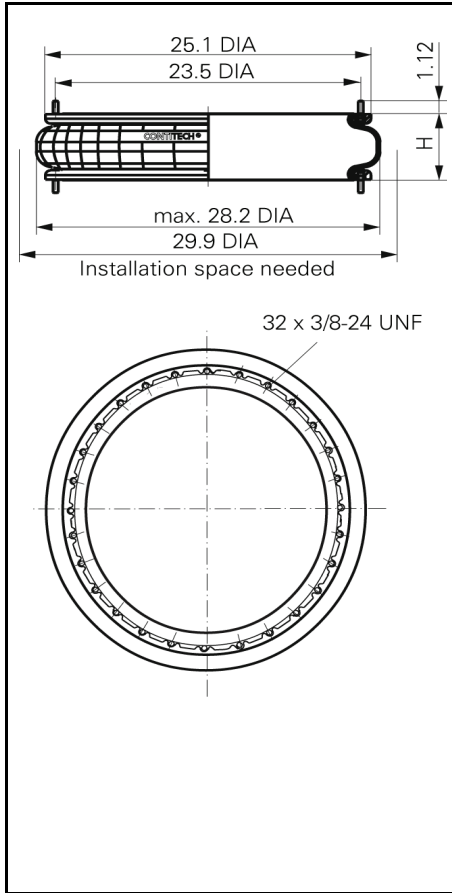
Pressure p	[psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	6.0	4620	9250	13870	18500	23120	27740	1836
	5.0	5450	10900	16350	21800	27250	32700	1544
	4.0	6190	12390	18580	24780	30970	37170	1195
	3.0	6760	13510	20270	27020	33780	40530	842



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 2870-16 21

Force-height-diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 151 lbs
Overall weight with bead rings, bolts, nuts and washers	24.5 lbs

Vibration isolation - dynamic characteristic values


Design height H: recommended 6.0 inch, minimum 5.1 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	17290	25940	34580	43230	51870		2797
Spring rate [lbs/in]	7380	10405	13461	16000	18543		
Natural frequency [Hz]	2.0	2.0	1.9	1.9	1.9		

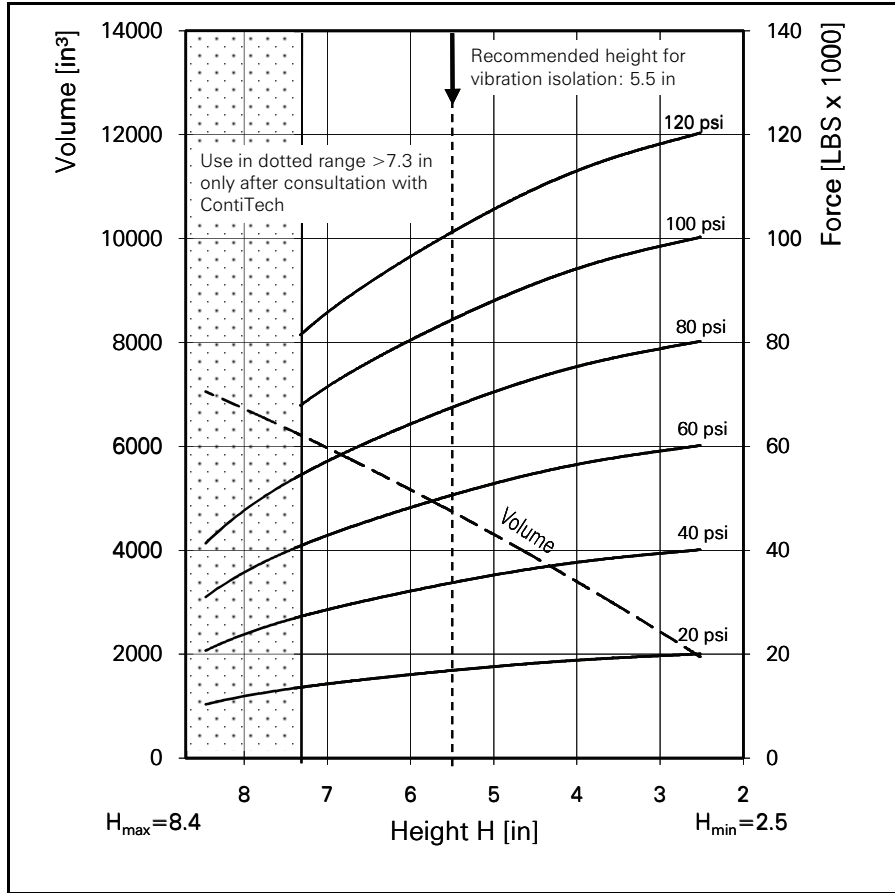
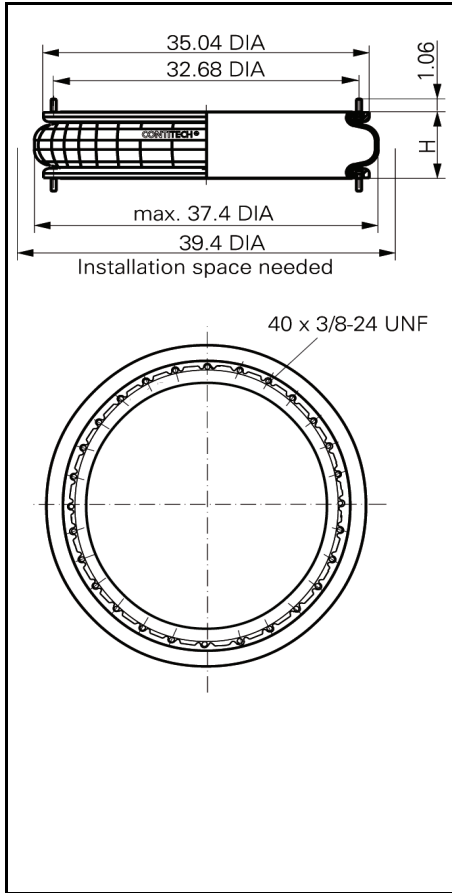
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	7	7340	14680	22020	29370	36710	3173
	6	8650	17290	25940	34580	43230	2797
	5	9790	19570	29360	39140	48930	2371
	4	10560	21130	31690	42250	52820	1865
	3	11160	22330	33490	44650	55810	1364

 Service instructions
3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FS 5450-16 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 310 lbs
Overall weight with bead rings, bolts, nuts and washers	48.5 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5.5 inch, minimum 4.7 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	33810	50720	67630	84530	101440		4713
Spring rate [lbs/in]	13532	19511	25290	30229	35739		
Natural frequency [Hz]	2.0	2.0	1.9	1.9	1.9		

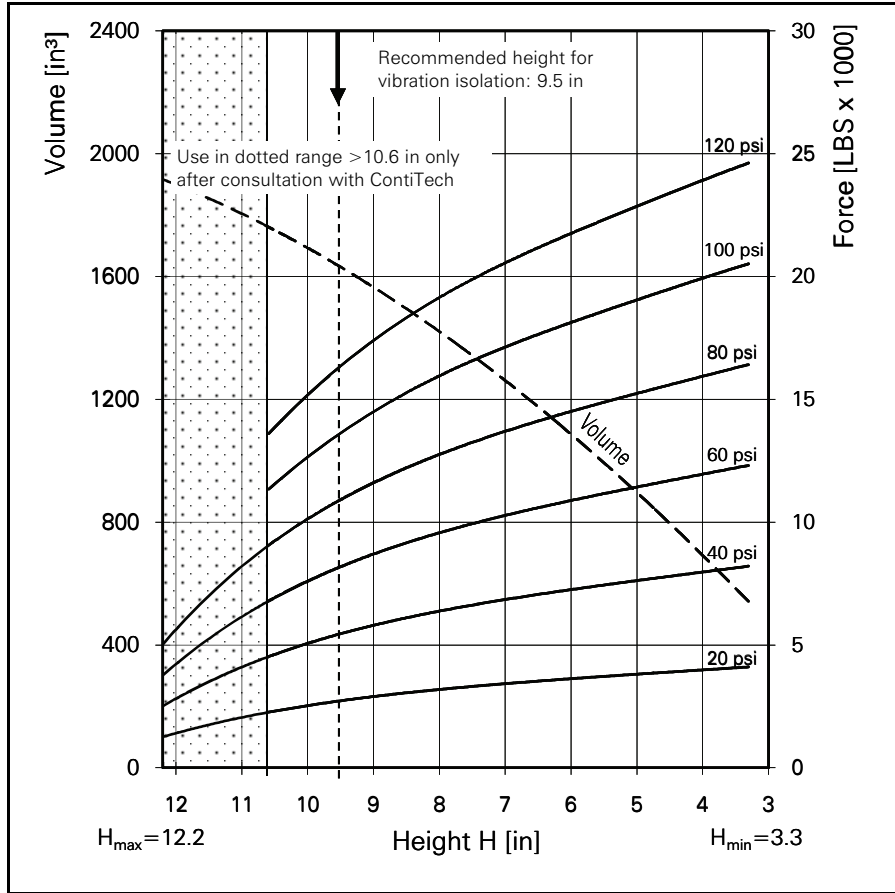
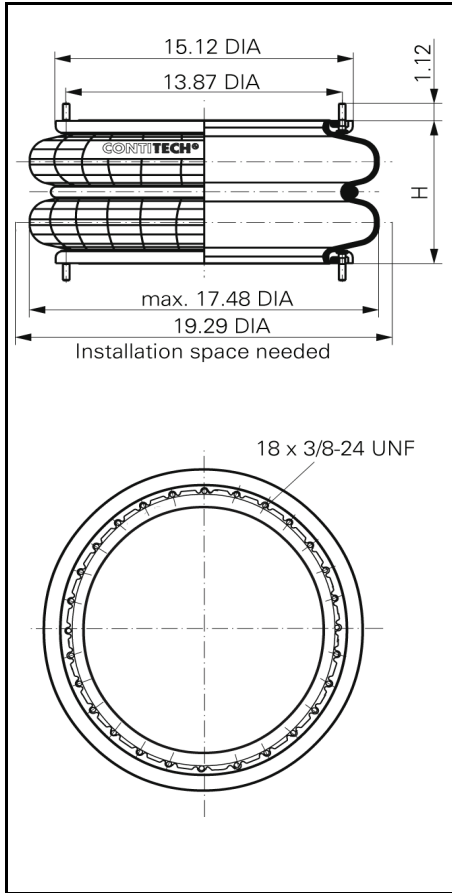
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	7.0	14280	28570	42850	57140	71420	6006
	6.0	16080	32160	48240	64320	80400	5162
	5.0	17580	35150	52730	70310	87890	4271
	4.0	18850	37710	56560	75410	94270	3410
	3.0	19710	39420	59130	78840	98550	2412

Service instructions
3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 960-22 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only

Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 45 lbs
Overall weight with bead rings, bolts, nuts and washers	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. V [in ³]
Force (Load) [lbs]	5450	8180	10900	13630	16350		1655
Spring rate [lbs/in]	1638	2303	3005	3633	4317		
Natural frequency [Hz]	1.7	1.7	1.6	1.6	1.6		

Pneumatic application - static characteristic values

Force F [lbs]

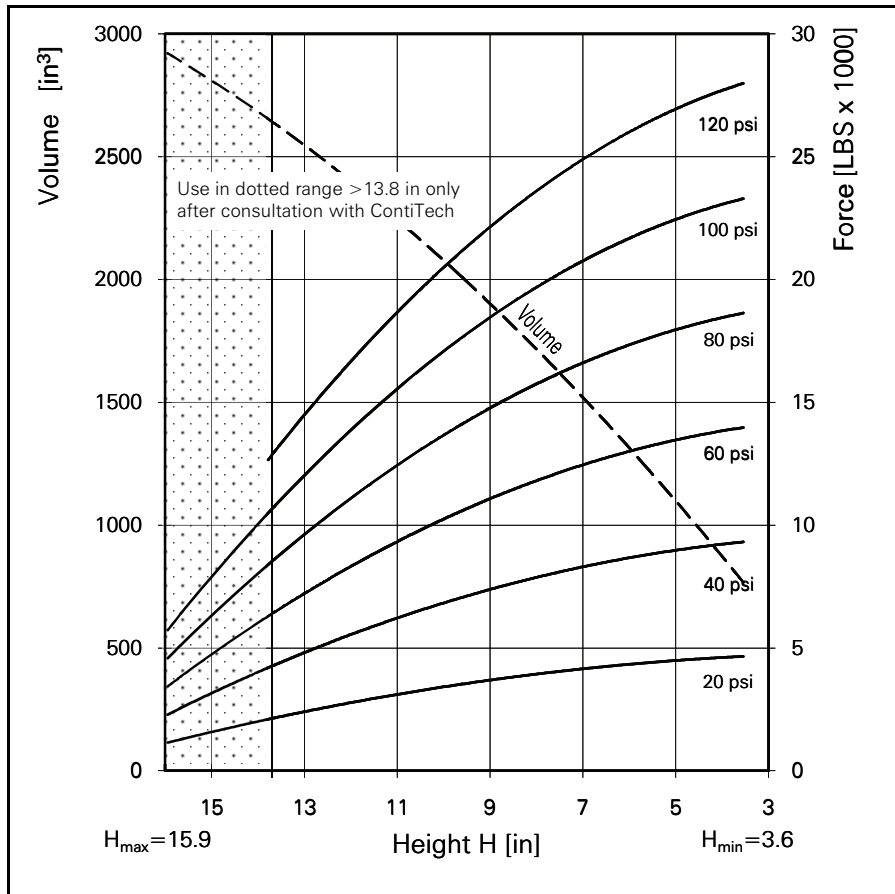
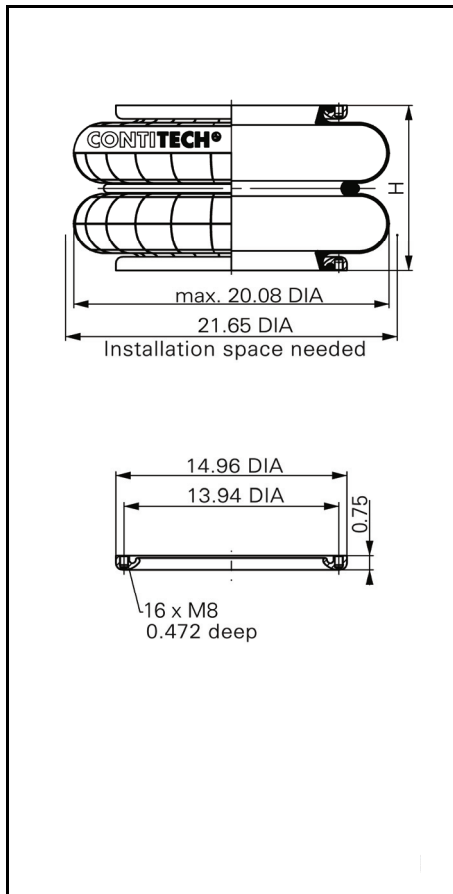
Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	10.0	2520	5040	7560	10080	12600	1687
	9.0	2890	5790	8680	11580	14470	1566
	8.0	3190	6380	9560	12750	15940	1423
	7.0	3420	6840	10260	13680	17100	1265
	6.0	3630	7260	10890	14510	18140	1081
	5.0	3800	7610	11410	15220	19020	896
	4.0	3990	7980	11970	15960	19950	688



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 1120-30 22

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only

Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 67 lbs
Overall weight with bead rings	27.1 lbs

Pneumatic application - static characteristic values

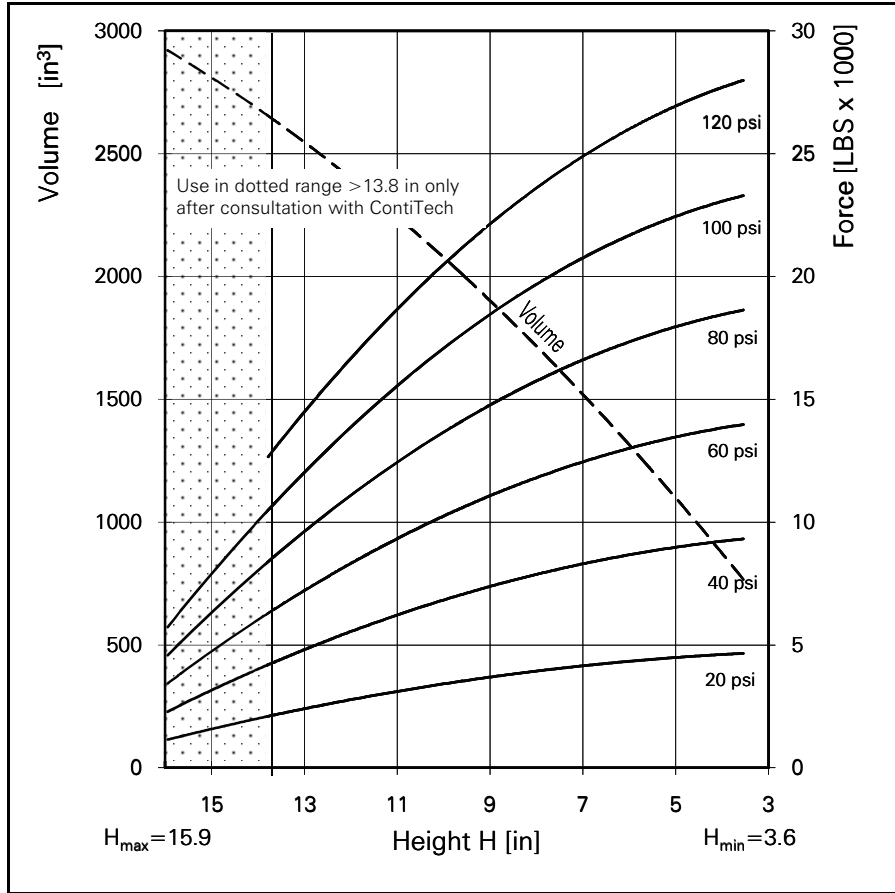
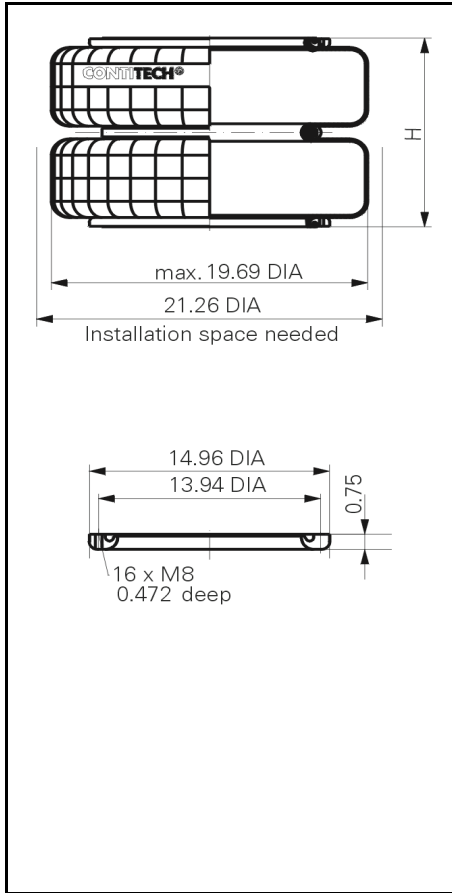
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 13	2410	4820	7240	9650	12060	14470	2540
11	3110	6220	9340	12450	15560	18670	2227
9	3670	7340	11010	14680	18350	22020	1848
7	4160	8320	12480	16640	20800	24960	1568
5	4500	9010	13510	18020	22520	27030	1077



Service instructions
M8 = 15 - 20 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 1120-30 22

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only

Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 405 lbs
Overall weight with bead rings	17.2 lbs

*) Installation note: Unit delivered with a height of approx. 13.8"

Pneumatic application - static characteristic values

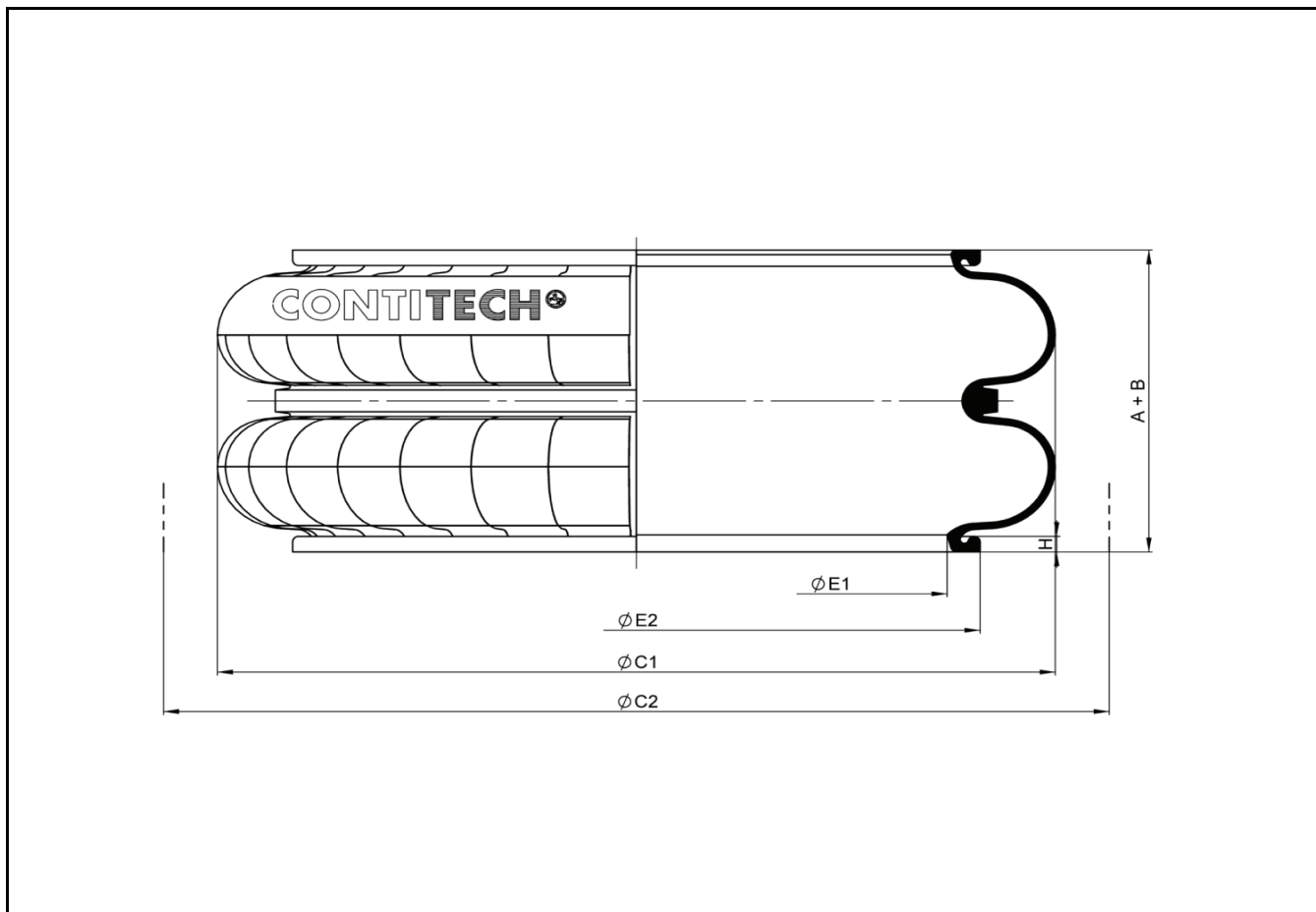
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 13	2410	4820	7240	9650	12060	14470	2540
11	3110	6220	9340	12450	15560	18670	2227
9	3670	7340	11010	14680	18350	22020	1848
7	4160	8320	12480	16640	20800	24960	1568
5	4500	9010	13510	18020	22520	27030	1077



Service instructions
M8 = 10 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



Purchase order data

Type	Order No.
Standard rubber	52149

Technical data

Min. pressure	0 bar
Return force to min. height*	≤ 300 N
Overall weight	5.9 kg

A	Minimum height*	90 mm
B	Maximum stroke(max. recommended stroke)*	315(260) mm
C1	Maximum diameter*	510 mm
C2	Installation space needed	550 mm
E1	Inner-Ø sealing and mounting surface	296 mm
E2	Bead diameter	340 mm
H	Height of bead	10.5 mm
	Maximum pressure	7 bar

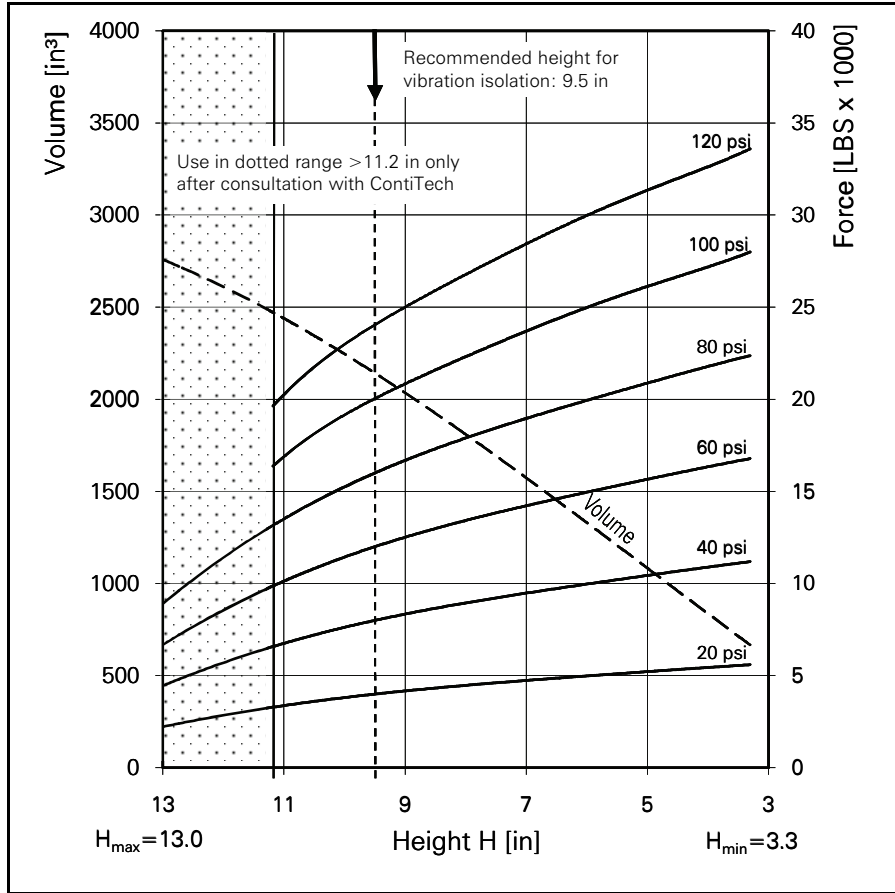
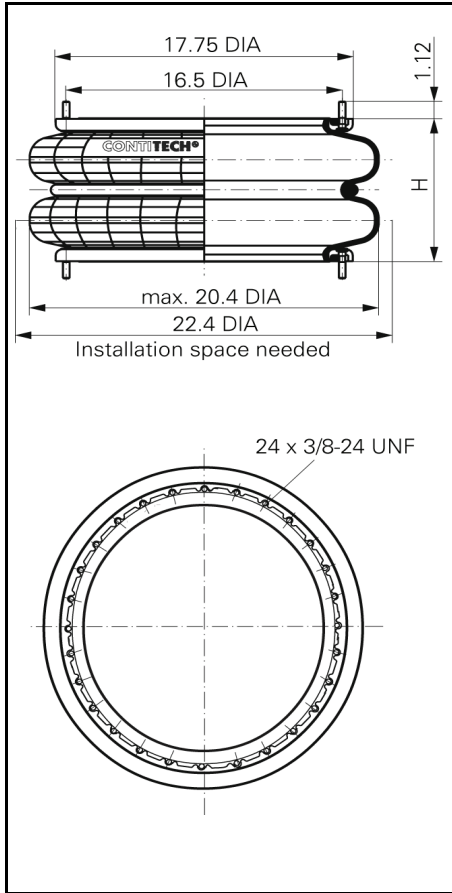
Remarks

Replacment of Order No. 2680753000

Make sure that the bead rings do fit to the bellow.
Improper bead rings may cause bodily injury and / or property damage.

Measuring procedure: Room temperature / Force- height- data quasistatic

* Data under use of bead rings with thickness of s=19mm



FD 1330-25 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only

Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 40 lbs
Overall weight with bead rings, bolts, nuts and washers	23.8 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. V [in ³]
Force (Load) [lbs]	7990	11990	15990	19980	23980		2145
Spring rate [lbs/in]	2173	3171	4101	4915	5882		
Natural frequency [Hz]	1.6	1.6	1.5	1.5	1.5		

Pneumatic application - static characteristic values

Force F [lbs]

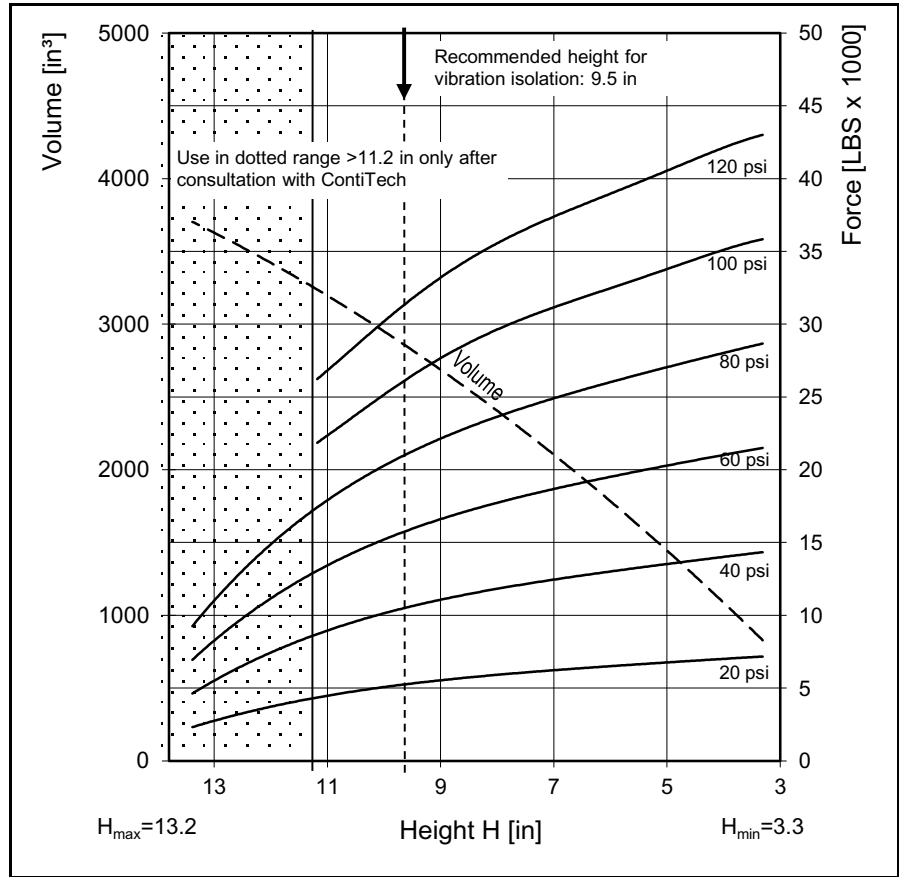
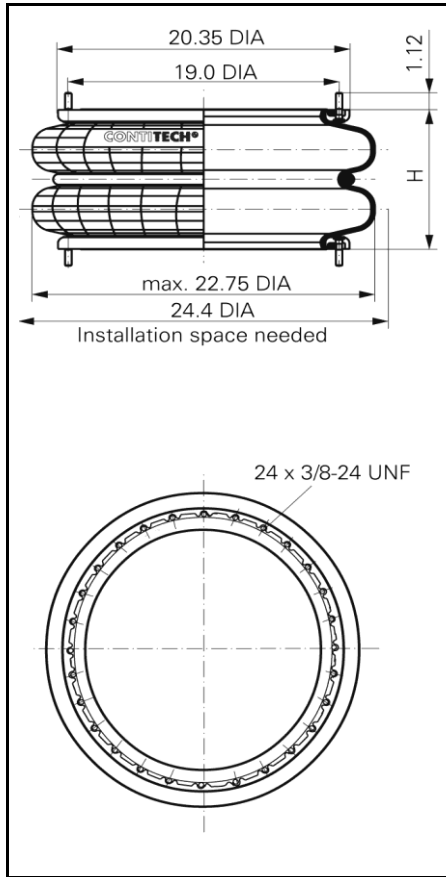
Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	11	3360	6710	10070	13430	16780	2440
	10	3930	7860	11790	15720	19650	2236
	9	4180	8360	12550	16730	20910	2050
	8	4470	8930	13400	17870	22330	1821
	7	4760	9510	14270	19030	23780	1565
	6	4980	9970	14950	19930	24910	1334
	5	5220	10440	15660	20880	26100	1083



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 1710-25 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 [psi]
Return force to min. height	≤ 70 [lbs]
Overall weight with bead rings, bolts, nuts and washers	26.5 [lbs]

Vibration isolation - dynamic characteristic values

Design height H: recommended 9.5 inch, minimum 8.65 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	10580	15860	21150	26440	31730		2820
Spring rate [lbs/in]	2814	4027	5266	6299	7417		
Natural frequency [Hz]	1.6	1.6	1.6	1.5	1.5		

Pneumatic application - static characteristic values

Force F [lbs]

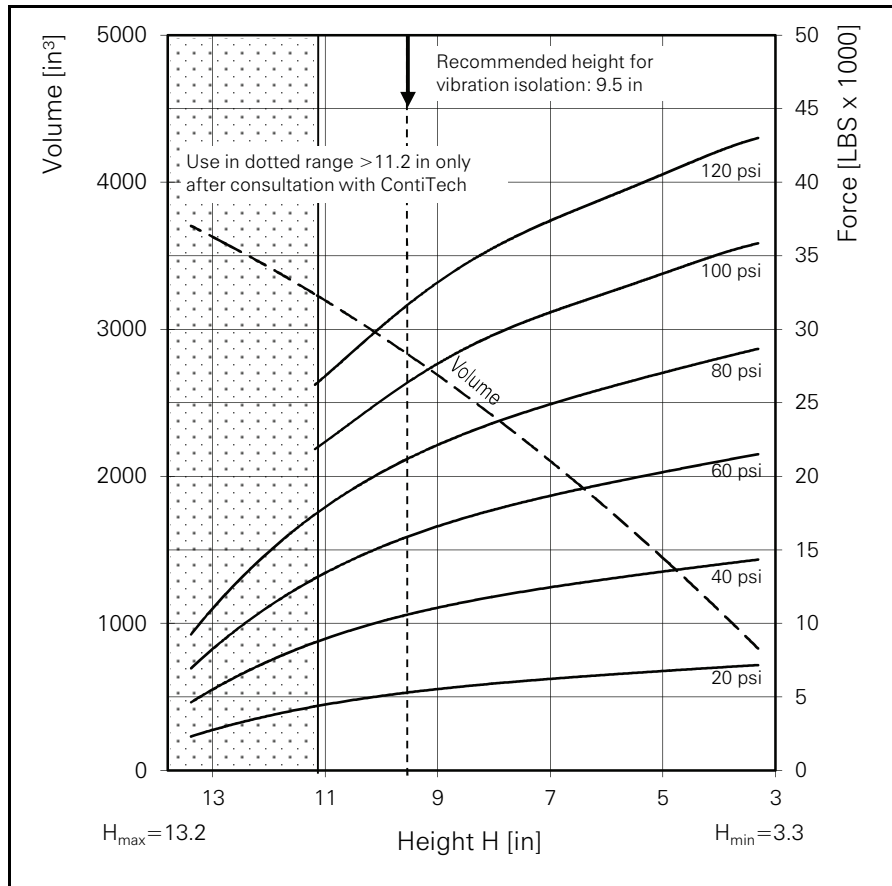
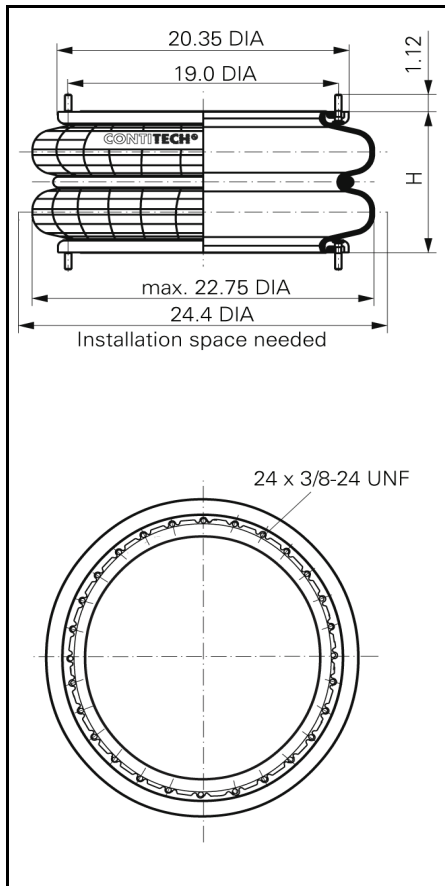
Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	10.0	5020	10040	15050	20070	25090	2943
	8.0	5920	11840	17760	23680	29600	2407
	6.0	6490	12990	19480	25970	32460	1781
	4.0	7000	14010	21010	28010	35020	1084



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 1710-25 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 [psi]
Return force to min. height	≤ 70 [lbs]
Overall weight with bead rings, bolts, nuts and washers	26.5 [lbs]

Vibration isolation - dynamic characteristic values

Design height H: recommended 9.5 inch, minimum 8.65 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	10580	15860	21150	26440	31730		2820
Spring rate [lbs/in]	2814	4027	5266	6299	7417		
Natural frequency [Hz]	1.6	1.6	1.6	1.5	1.5		

Pneumatic application - static characteristic values

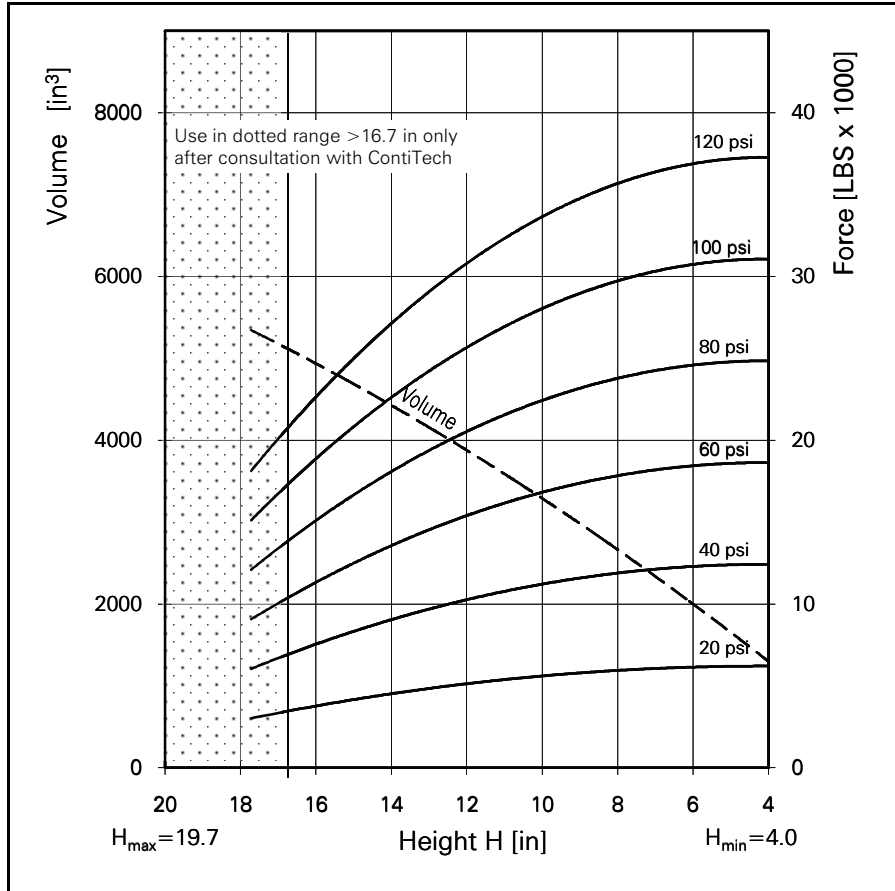
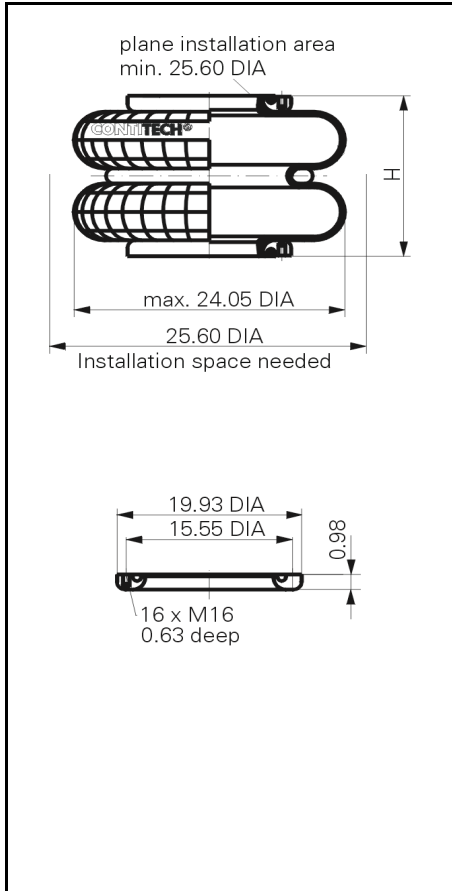
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	10.0	5020	10040	15050	20070	25090	2943
	8.0	5920	11840	17760	23680	29600	2407
	6.0	6490	12990	19480	25970	32460	1781
	4.0	7000	14010	21010	28010	35020	1084



Service instructions
3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 1730-40 22

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 lbs
Overall weight with bead rings	31 lbs

Pneumatic application - static characteristic values

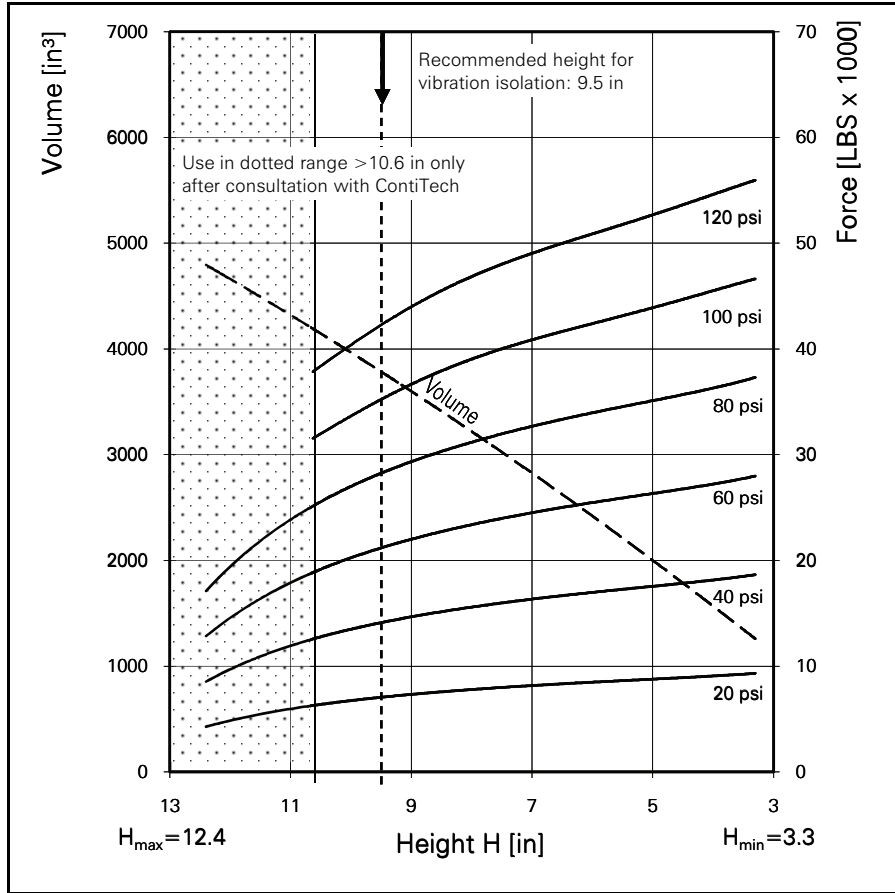
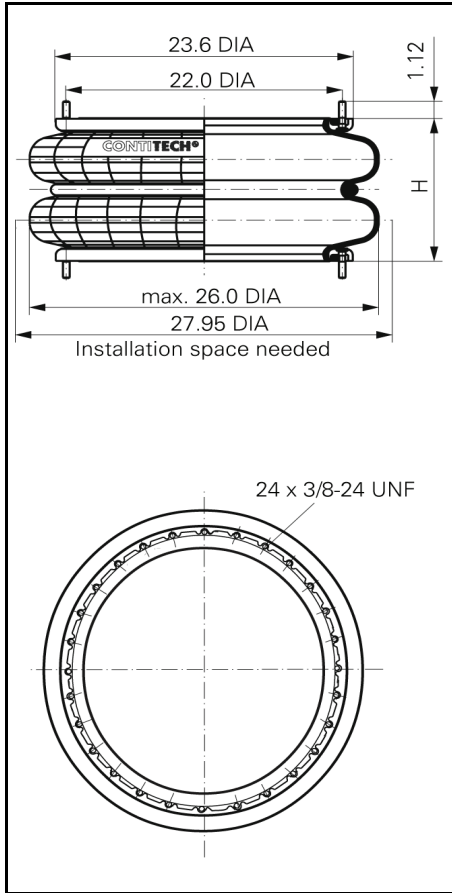
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 17	3350	6690	10040	13380	16730	20070	5157
15	4120	8240	12360	16480	20590	24710	4752
13	4810	9620	14430	19230	24040	28850	4158
11	5390	10780	16170	21550	26940	32330	3596
9	5810	11620	17430	23240	29050	34870	2938
7	6040	12080	18130	24170	30210	36250	2299



Service instructions
M16 = 42-45 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 2380-24 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 100 lbs
Overall weight with bead rings, bolts, nuts and washers	31 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. V [in ³]
Force (Load)	[lbs]	14090	21130	28180	35220	42260		3778
Spring rate	[lbs/in]	3790	5344	7004	8391	10009		
Natural frequency	[Hz]	1.6	1.6	1.6	1.5	1.5		

Pneumatic application - static characteristic values

Force F [lbs]

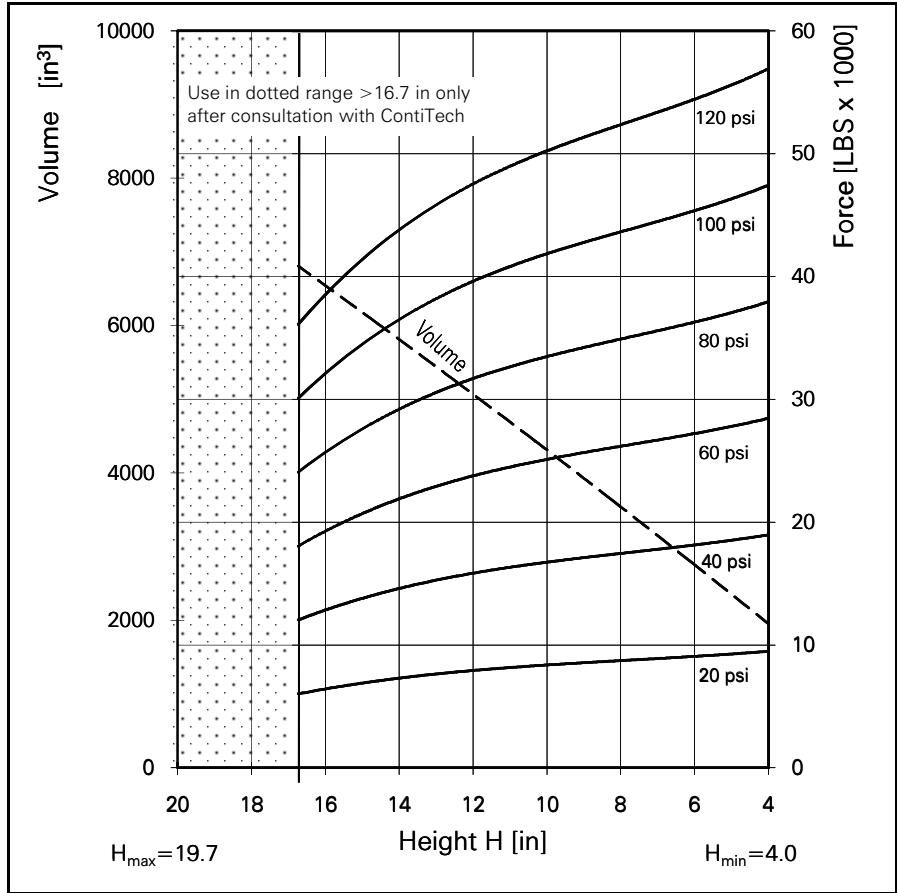
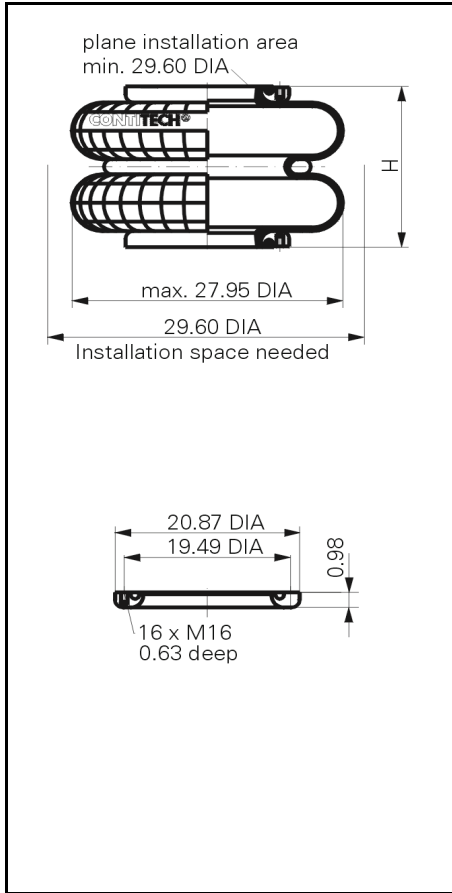
Pressure p	[psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]		10	6730	13470	20200	26930	33670	40400
		8	7830	15650	23480	31300	39130	46950
		6	8480	16970	25450	33940	42420	50900
		4	9100	18210	27310	36420	45520	54620



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 2470-40 22

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 lbs
Overall weight with bead rings	73 lbs

Pneumatic application - static characteristic values

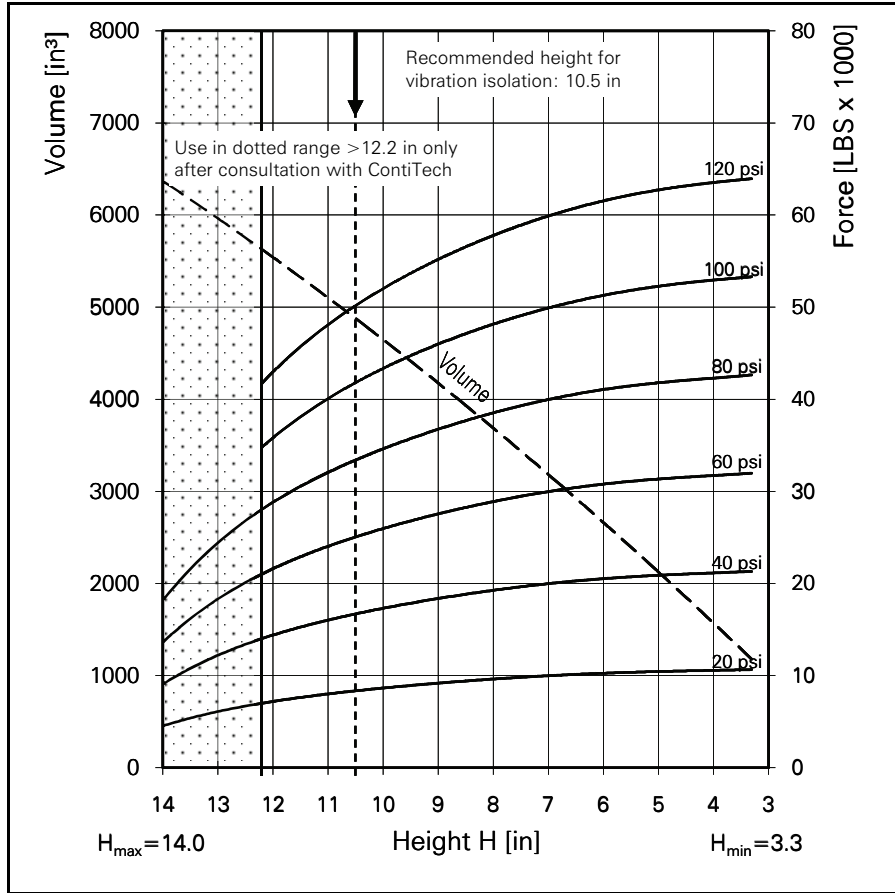
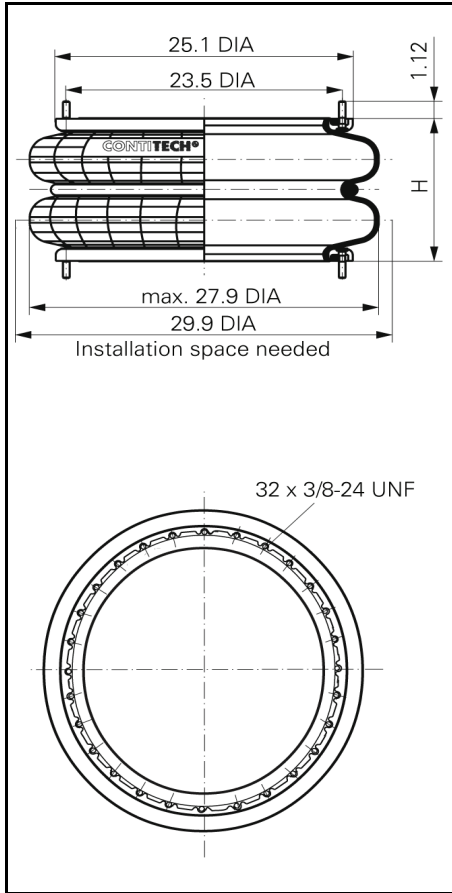
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	18	5410	10830	16240	21660	27070	32490	7208
	13	7610	15210	22820	30420	38030	45630	5446
	11	8160	16320	24480	32640	40800	48960	4702
	9	8570	17140	25710	34280	42850	51420	3932
	7	8890	17780	26670	35560	44450	53330	3126



Service instructions
M16 = 60 LBxFT

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FD 2870-30 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 157 lbs
Overall weight with bead rings, bolts, nuts and washers	34 lbs

Vibration isolation - dynamic characteristic values


Design height H: recommended 10.5 inch, minimum 9.6 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	16700	25050	33400	41750	50100		4884
Spring rate [lbs/in]	4058	5817	7420	8734	10452		
Natural frequency [Hz]	1.5	1.5	1.5	1.4	1.4		

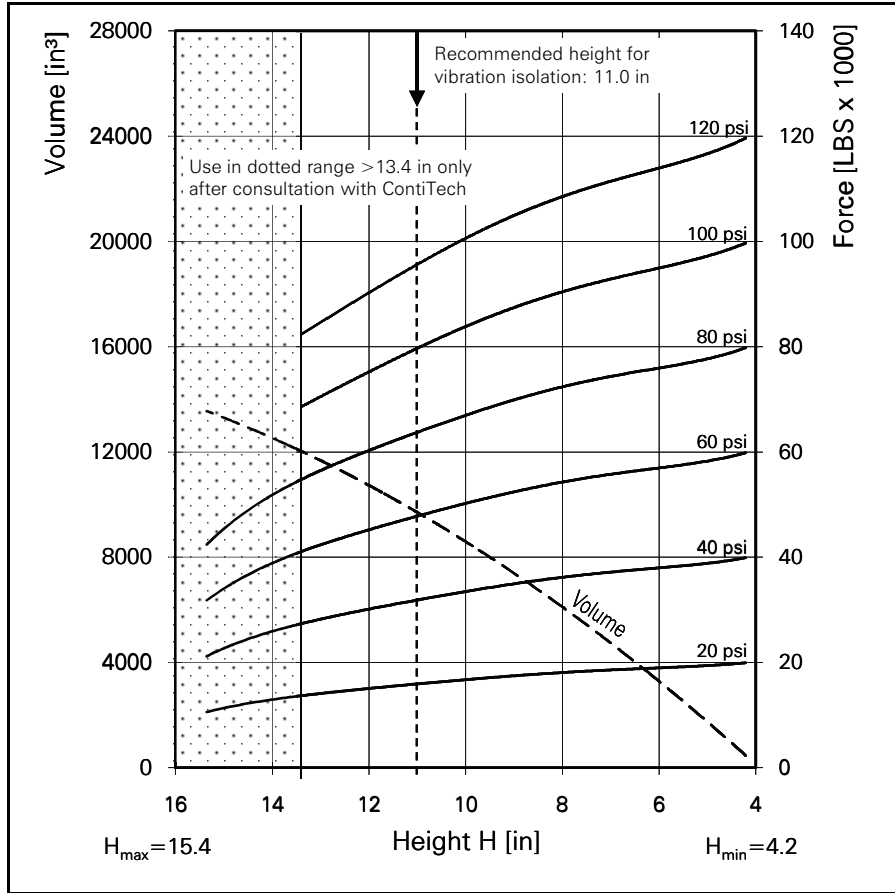
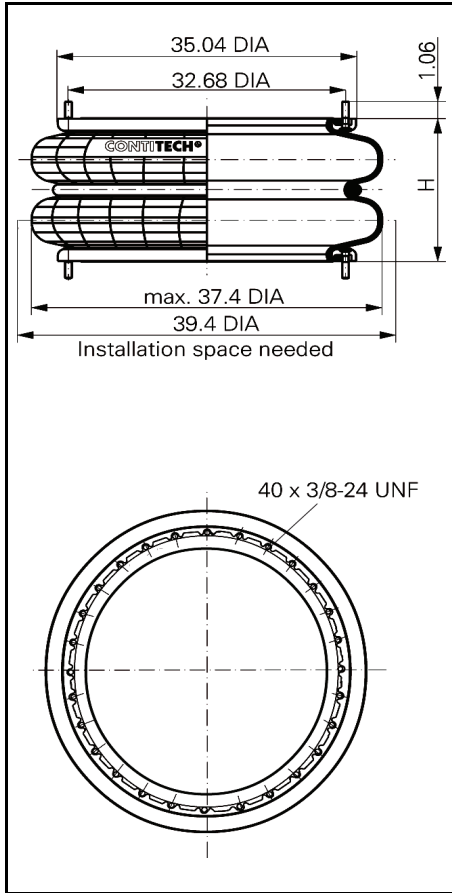
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	12	7130	14270	21400	28540	35670	5521
	10	8640	17290	25930	34570	43210	4647
	8	9640	19280	28930	38570	48210	3702
	6	10230	20460	30690	40920	51150	2657
	4	10580	21170	31750	42330	52920	1560

 Service instructions
3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FD 5450-28 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 350 lbs
Overall weight with bead rings, bolts, nuts and washers	72.5 lbs

Vibration isolation - dynamic characteristic values


Design height H: recommended 11,0 inch, minimum 10,2 inch

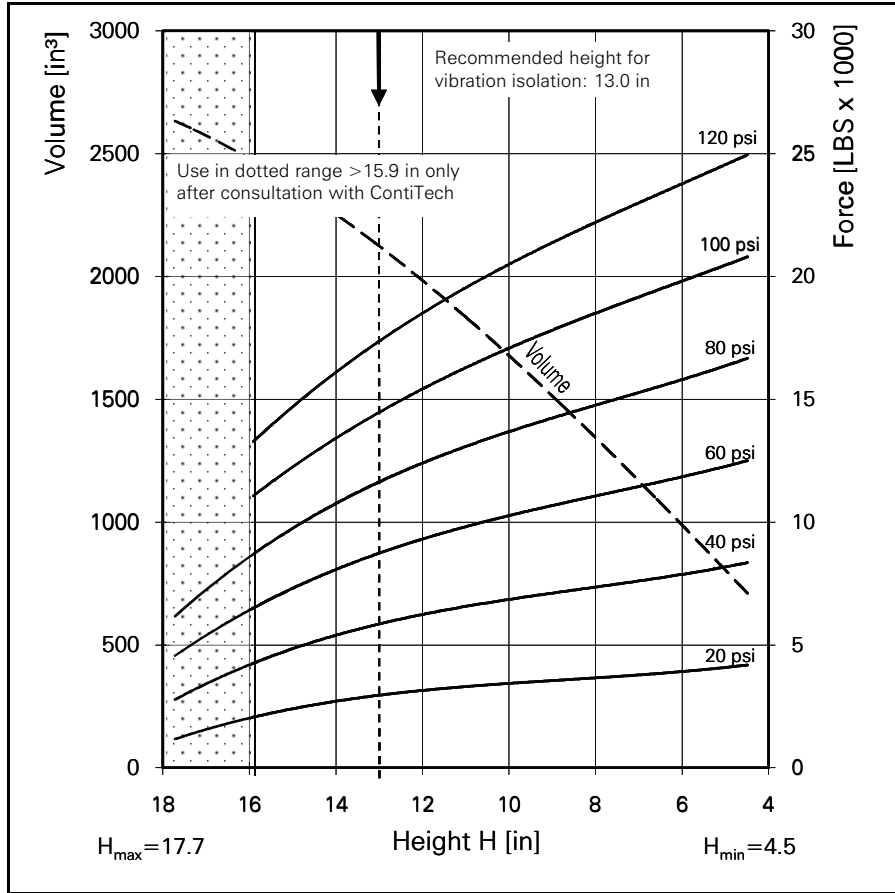
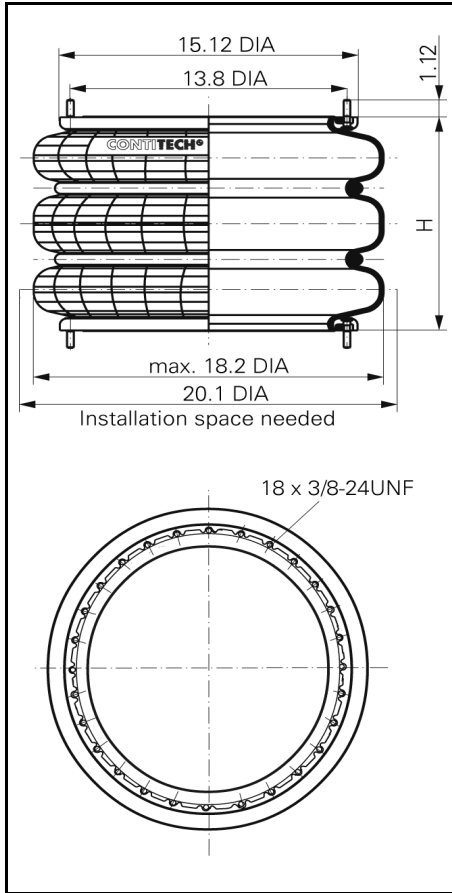
Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	31720	47590	63450	79310	95170		9577
Spring rate [lbs/in]	6661	9336	12195	14533	17173		
Natural frequency [Hz]	1.4	1.4	1.4	1.3	1.3		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	13.0	14120	28240	42350	56470	70590	11677
	11.0	15860	31720	47590	63450	79310	9577
	9.0	17490	34990	52480	69980	87470	7385
	7.0	18520	37040	55560	74080	92600	4788
	5.0	19530	39070	58600	78130	97660	1789

 Service instructions
3/8-24 UNF = 28-32 LBxFT



FT 960-34 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 135 lbs
Overall weight with bead rings, bolts, nuts and washers	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. V [in ³]
Force (Load)	[lbs]	5770	8650	11530	14420	17300		2125
Spring rate	[lbs/in]	1144	1659	2079	2610	3029		
Natural frequency	[Hz]	1.4	1.3	1.3	1.3	1.3		

Pneumatic application - static characteristic values

Force F [lbs]

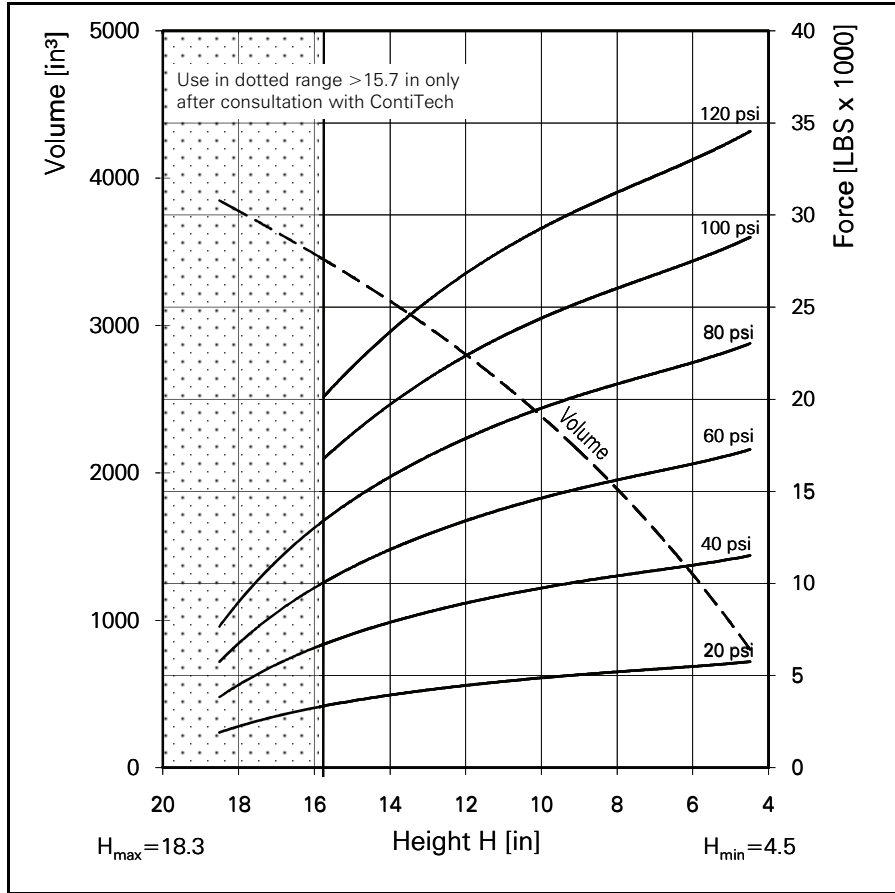
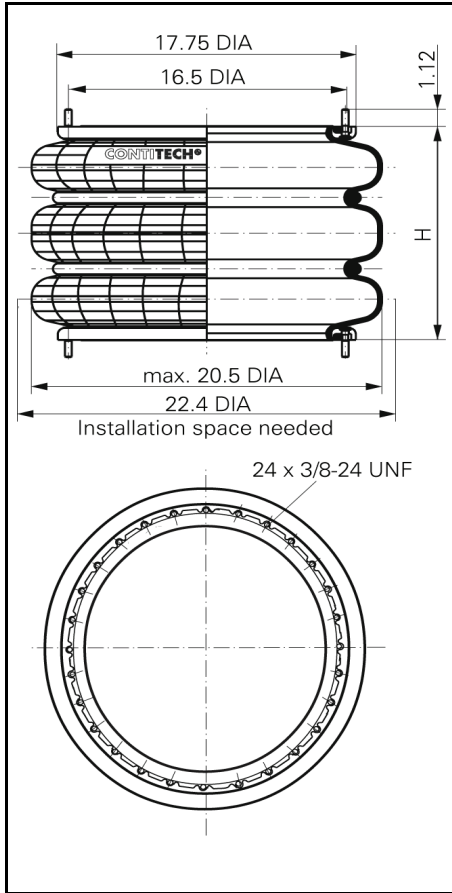
Pressure p	[psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]		15	2440	4870	7310	9750	12180	2359
		13	2880	5770	8650	11530	14420	2125
		11	3270	6530	9800	13070	16330	1846
		9	3560	7130	10690	14250	17820	1511
		7	3830	7650	11480	15300	19130	1161



Service instructions

3/8-24 UNF = 28-32 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



FT 1330-35 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only

Port	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel


Technical data

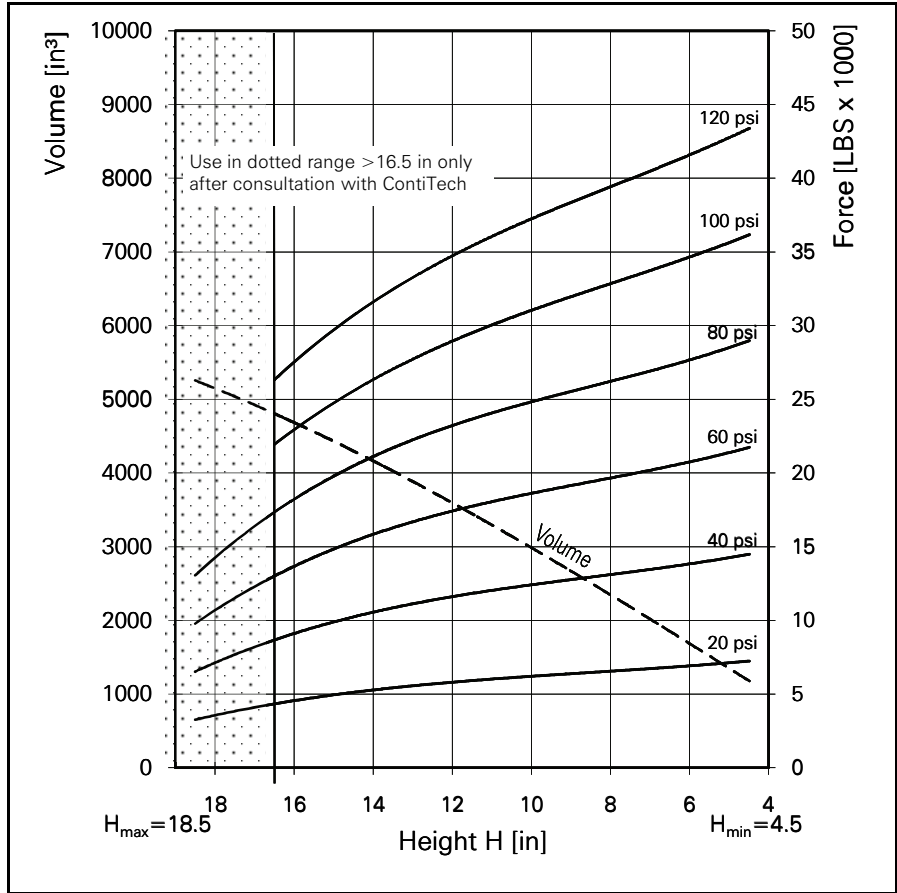
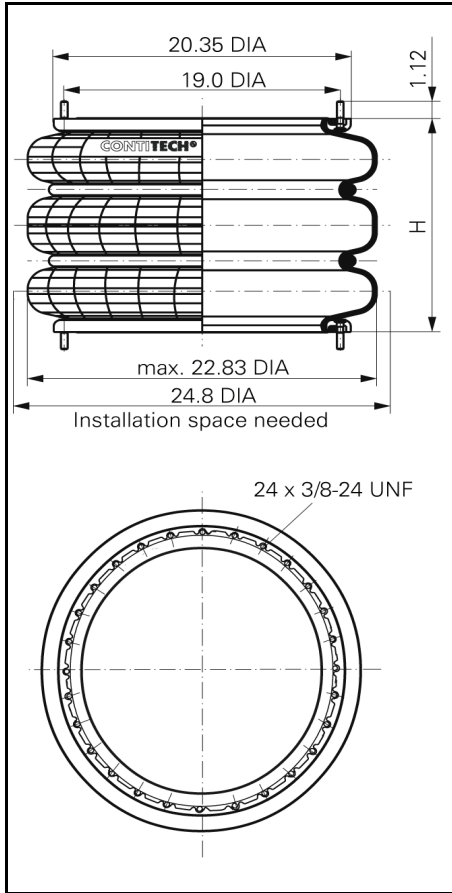
Min. pressure	0 psi
Return force to min. height	≤ 70 lbs
Overall weight with bead rings, bolts, nuts and washers	27.6 lbs

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 15	3620	7240	10860	14480	18100	21720	3321
13	4240	8480	12730	16970	21210	25450	2991
11	4680	9360	14040	18720	23400	28080	2618
9	5050	10100	15150	20200	25250	30310	2145
7	5350	10710	16060	21410	26770	32120	1594
5	5660	11330	16990	22660	28320	33980	950

 Service instructions
3/8-24 UNF = 28-32 LBxFT



FT 1710-38 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichlorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 90 lbs
Overall weight with bead rings, bolts, nuts and washers	32 lbs



Service instructions

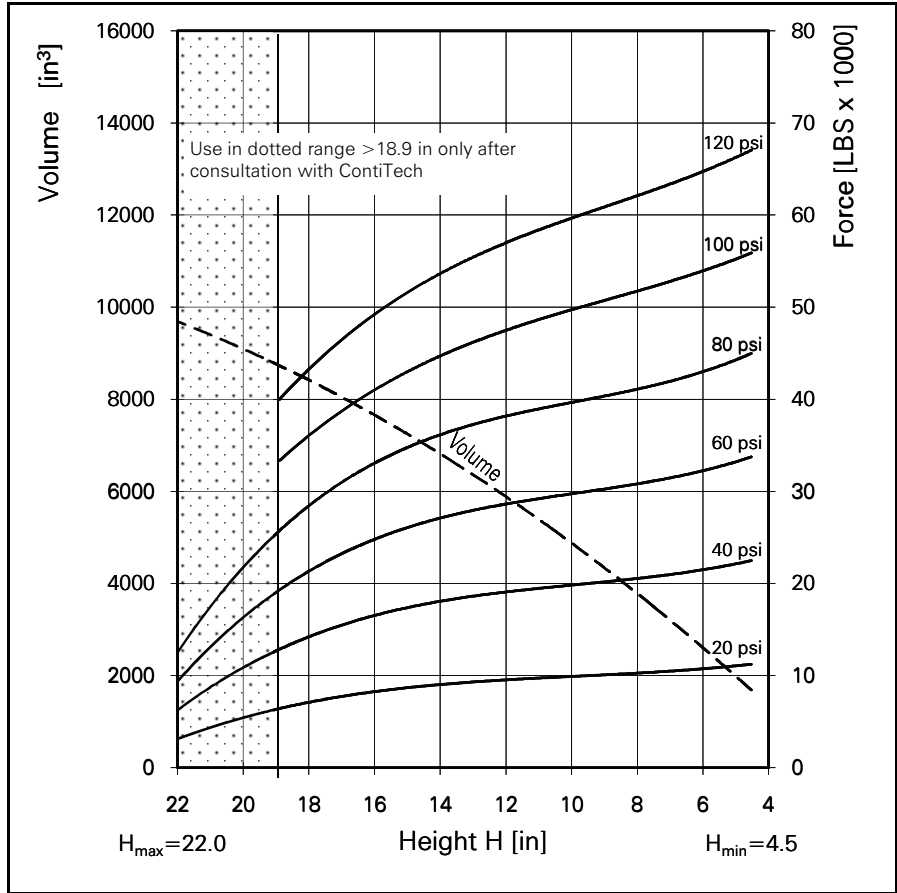
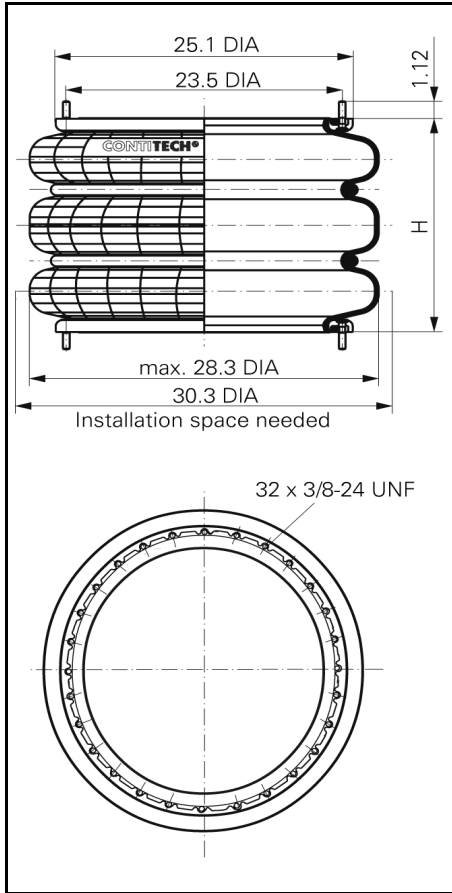
3/8-24 UNF = 28-32 LBxFT

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 15	4940	9880	14820	19760	24700	29640	4419
13	5550	11100	16660	22210	27760	33310	3907
11	6010	12030	18040	24060	30070	36090	3285
9	6360	12720	19090	25450	31810	38170	2668
7	6750	13500	20260	27010	33760	40510	2029

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



FT 2870-45 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 180 lbs
Overall weight with bead rings, bolts, nuts and washers	38 lbs

Pneumatic application - static characteristic values

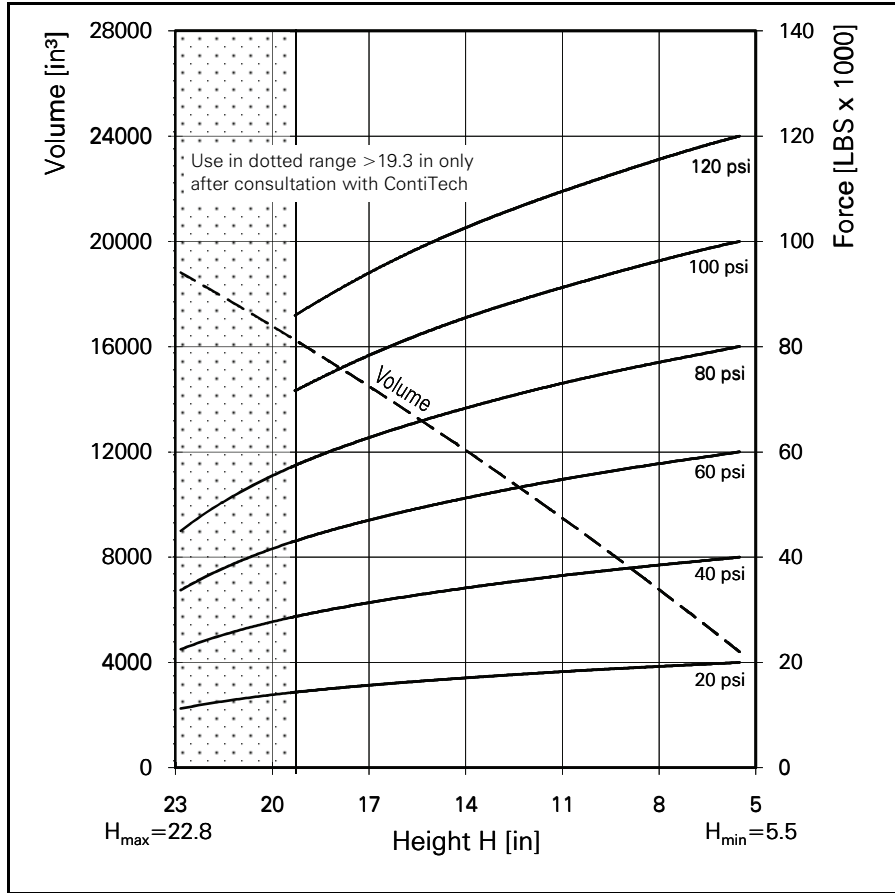
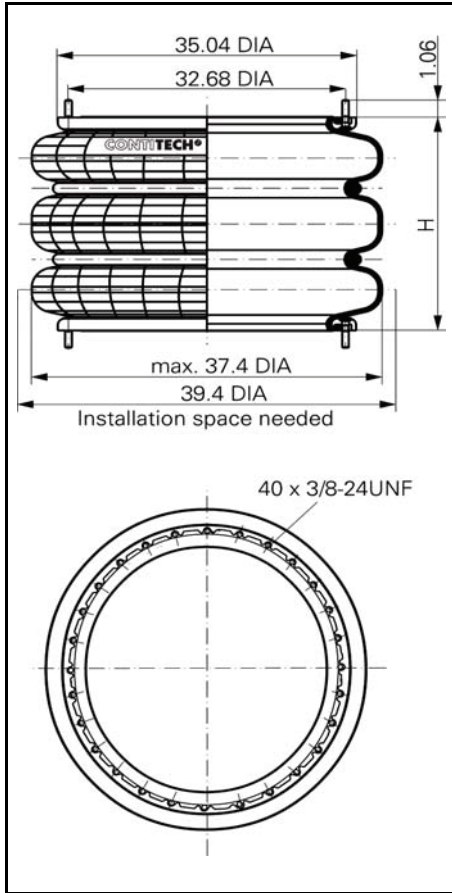
Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 18	7180	14370	21550	28730	35920	43100	8500
15	8580	17160	25750	34330	42910	51490	7251
12	9510	19010	28520	38020	47530	57040	6015
9	10120	20240	30360	40480	50590	60710	4124
6	10820	21640	32470	43290	54110	64930	2440



Service instructions

3/8-24 UNF = 28-32 LBxFT



FT 5450-44 21

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
Option	
0	Standard
3	Epichorohydrin
4	High Pressure
6	Stainless Steel

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 380 lbs
Overall weight with bead rings, bolts, nuts and washers	97 lbs



Service instructions

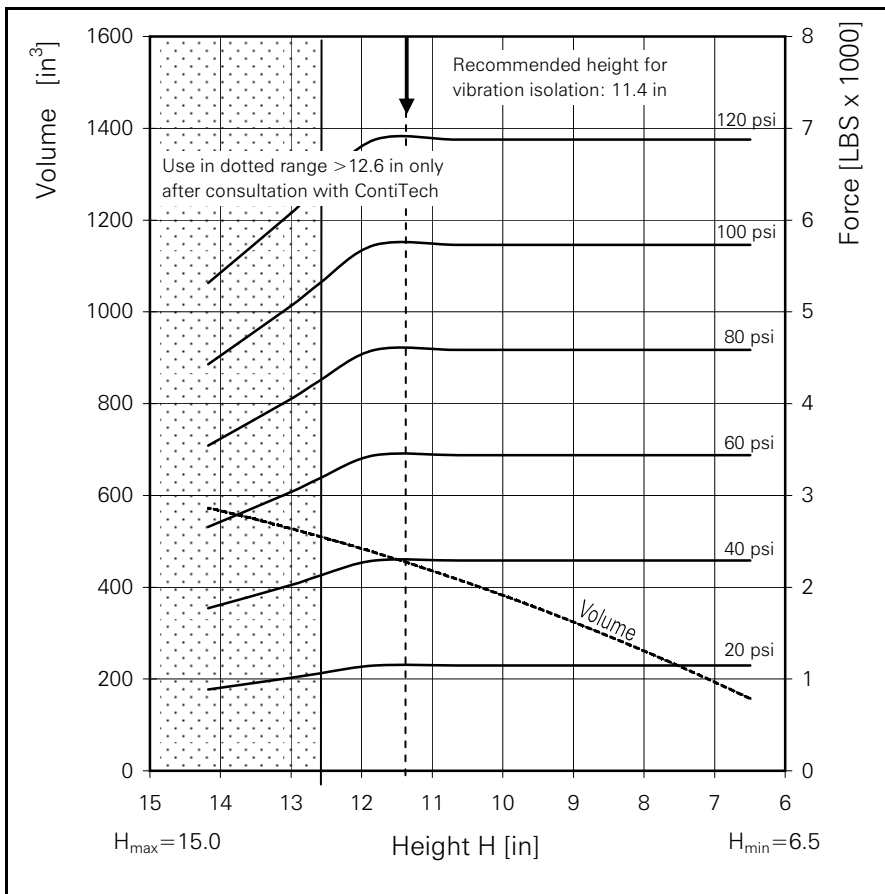
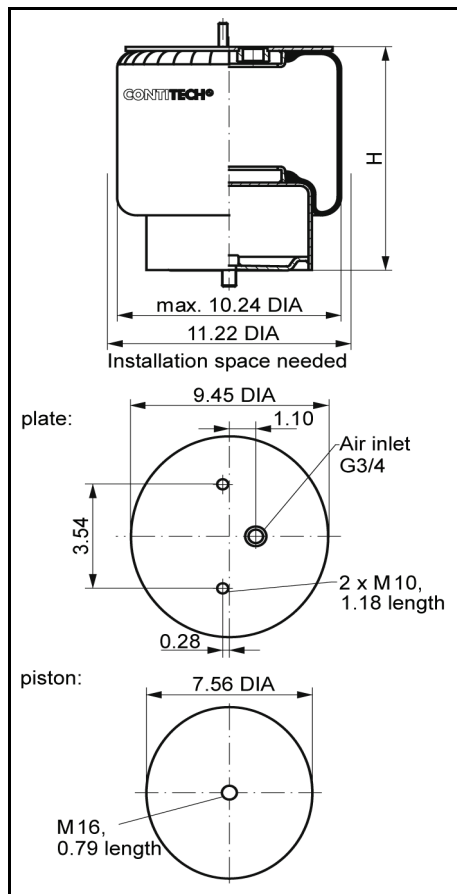
3/8-24 UNF = 28-32 LBxFT

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 18	15080	30170	45250	60340	75420	90500	15381
16	16190	32380	48560	64750	80940	97130	13705
14	17090	34190	51280	68380	85470	102560	12000
12	17880	35770	53650	71530	89410	107300	10289
10	18590	37170	55760	74340	92930	111520	8564
8	19290	38590	57880	77180	96470	115760	6810
6	19850	39700	59550	79390	99240	119090	4893

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



RZ 330-22

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
A	G1

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	13 psi
Return force to min. height	≤ 697 lbs
Overall weight	18 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 11.4 inch , lateral guidance necessary

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	2290	3440	4580	5730	6880		458
Spring rate [lbs/in]	520	726	995	1215	1447		
Natural frequency [Hz]	1.6	1.5	1.5	1.5	1.5		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol. V [in ³]
Height H [in]	12	1130	2250	3380	4500	5630	484
	11	1150	2290	3440	4580	5730	434
	10	1150	2290	3440	4580	5730	379
	9	1150	2290	3440	4580	5730	325
	8	1150	2290	3440	4580	5730	267
	7	1150	2290	3440	4580	5730	194



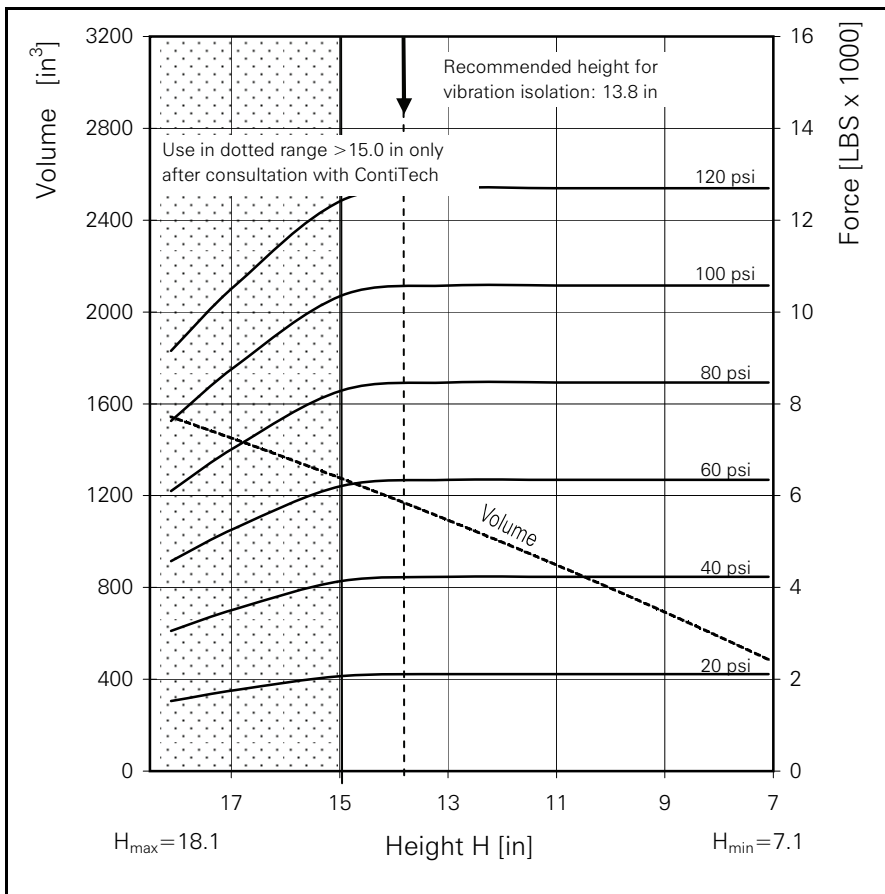
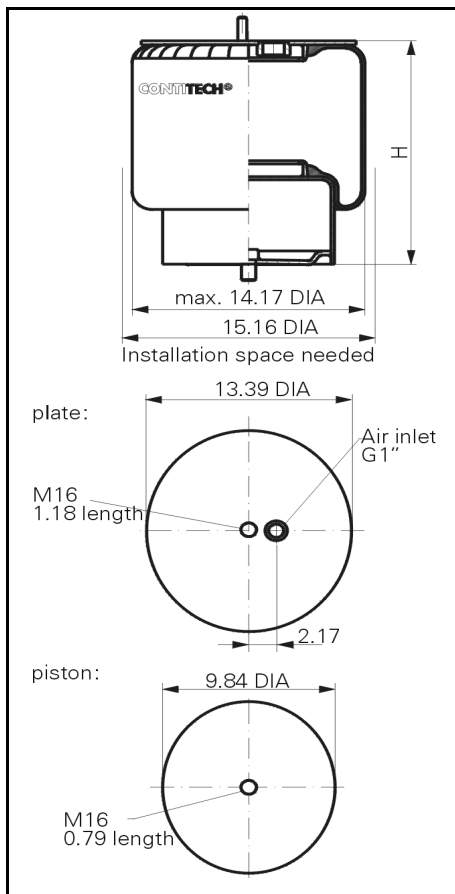
Service instructions

M10 = 24 LBxFT

M16 = 90 LBxFT

G 3/4 = 6 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



RZ 640-26

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
A	G1

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	13 psi
Return force to min. height	≤ 1394 lbs
Overall weight	31 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 13,8 inch , lateral guidance necessary

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	4200	6290	8390	10490	12590		1169
Spring rate [lbs/in]	646	898	1247	1575	1878		
Natural frequency [Hz]	1.3	1.2	1.2	1.2	1.2		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol. V [in ³]
Height H [in]	14	2090	4190	6280	8370	10470	1189
	12	2120	4230	6350	8460	10580	988
	10	2120	4230	6350	8460	10580	793
	8	2120	4230	6350	8460	10580	587

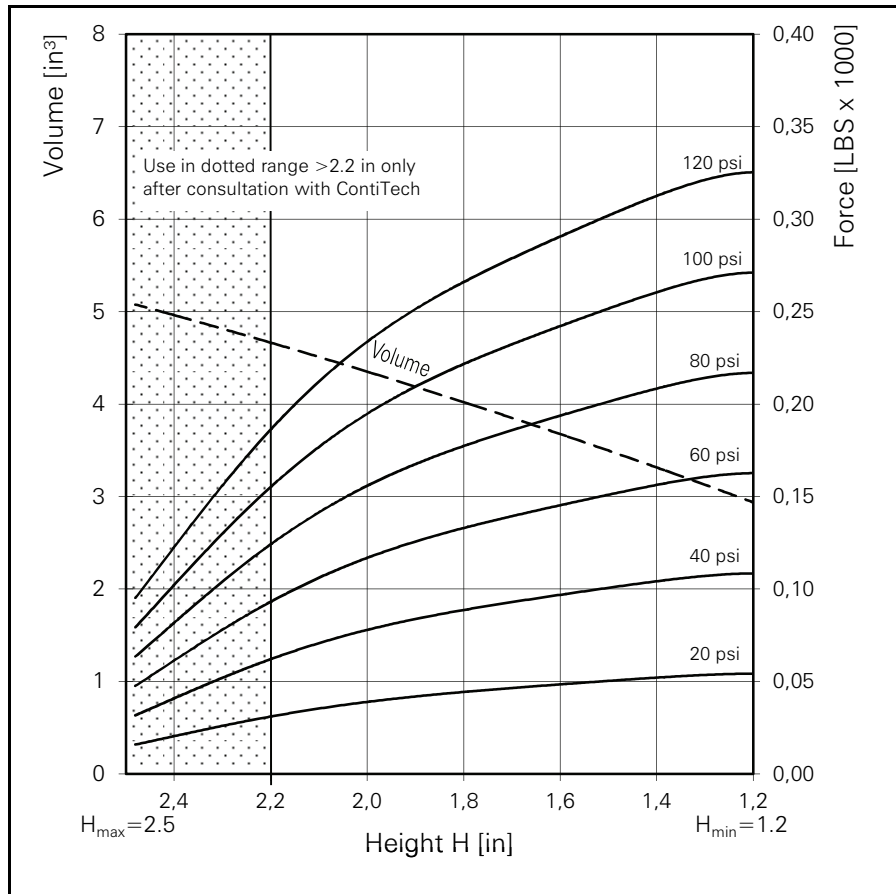
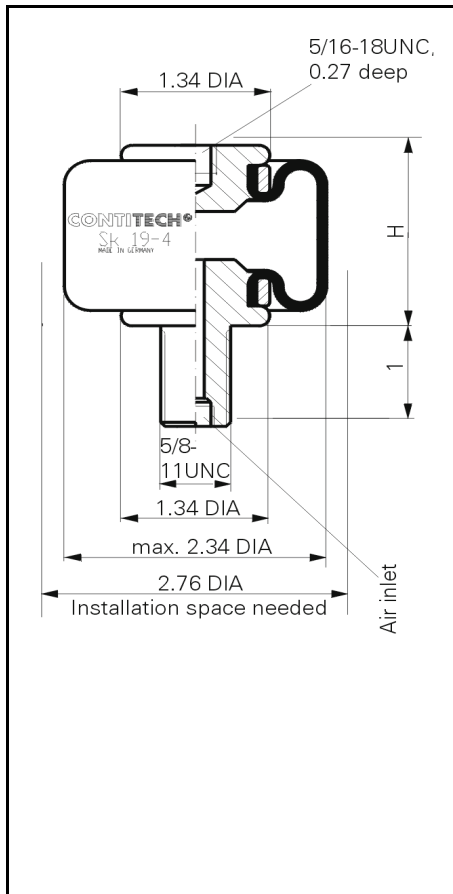


Service instructions

M16 = 90 LBxFT

G 1 = 30 LBxFT

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



SK 19-4

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 5 lbs
Overall weight	0.15 lbs

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	93	124	155	186	4.6
1.8	44	88	132	176	220	264	4.0
1.4	52	104	156	208	260	312	3.3



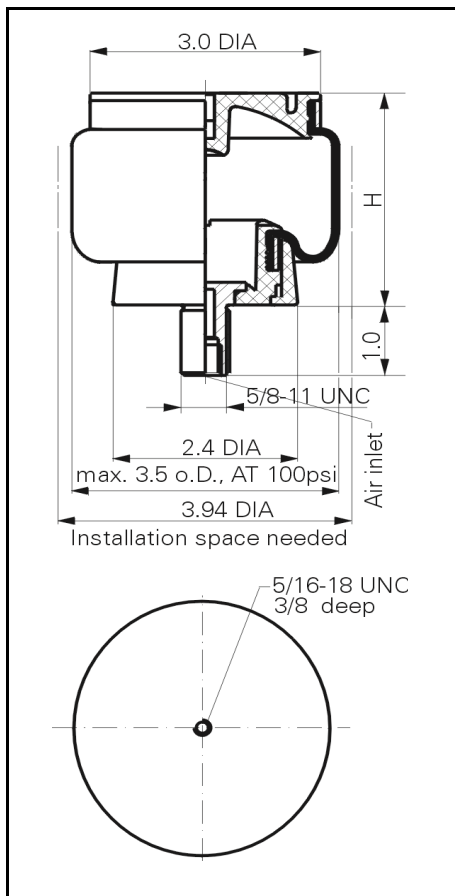
Service instructions

5/16-18 UNC = 2-4 LBxFT

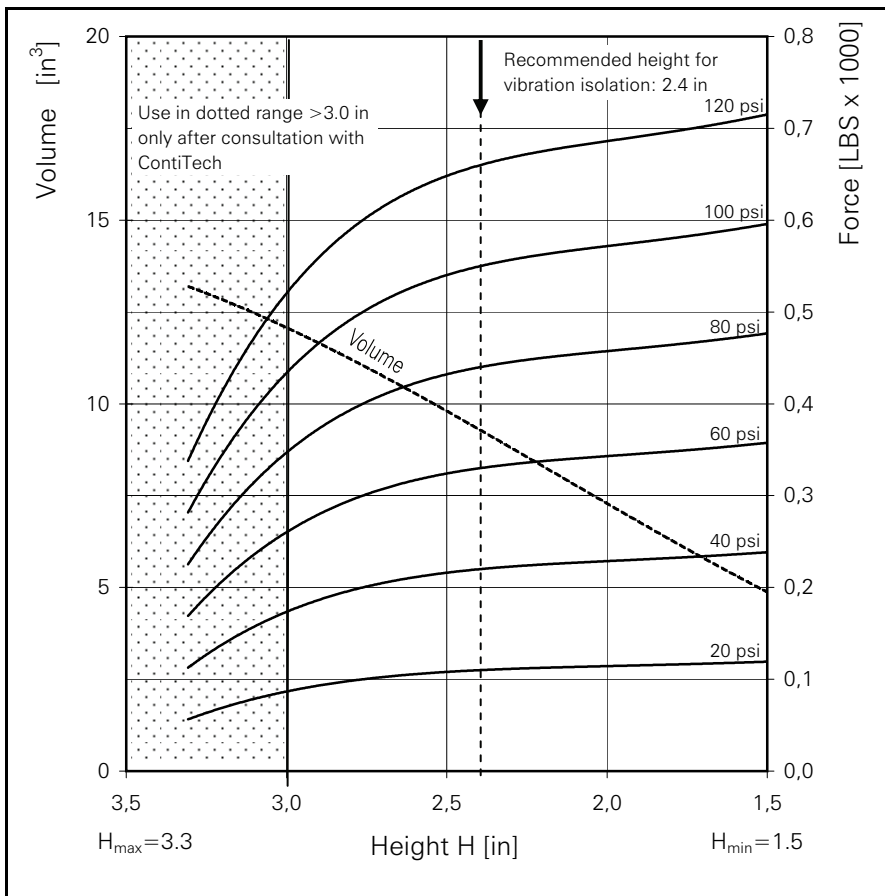
5/8-11 UNC = 8-10 LBxFT

1/8 NPT = Handtight plus one turn

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



SK 37-6 P02



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 34 lbs
Overall weight	0.7 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 2.4 inch

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	220	330	440	550	660		9
Spring rate [lbs/in]	171	242	315	377	443		
Natural frequency [Hz]	2.8	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. V [in ³]
Height H [in]	3	90	170	260	340	430	510
	2.5	110	210	320	430	530	640
	2	110	230	340	460	570	690



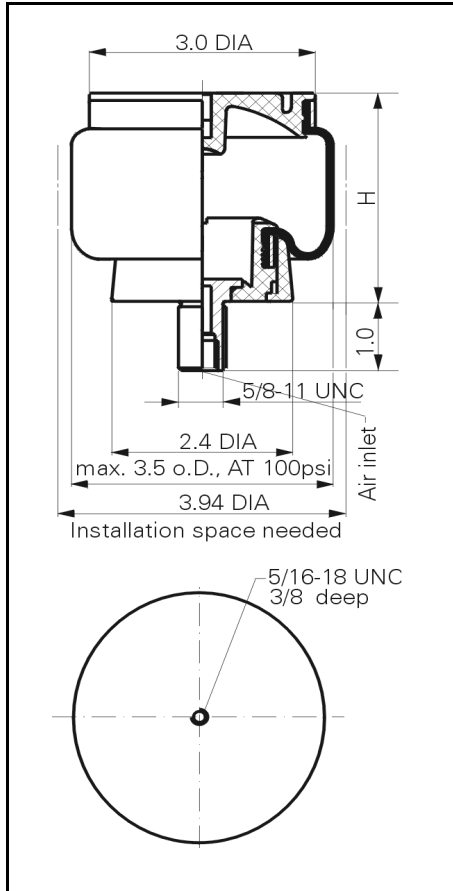
Service instructions

5/16-18 UNC = 2-4 LBxFT

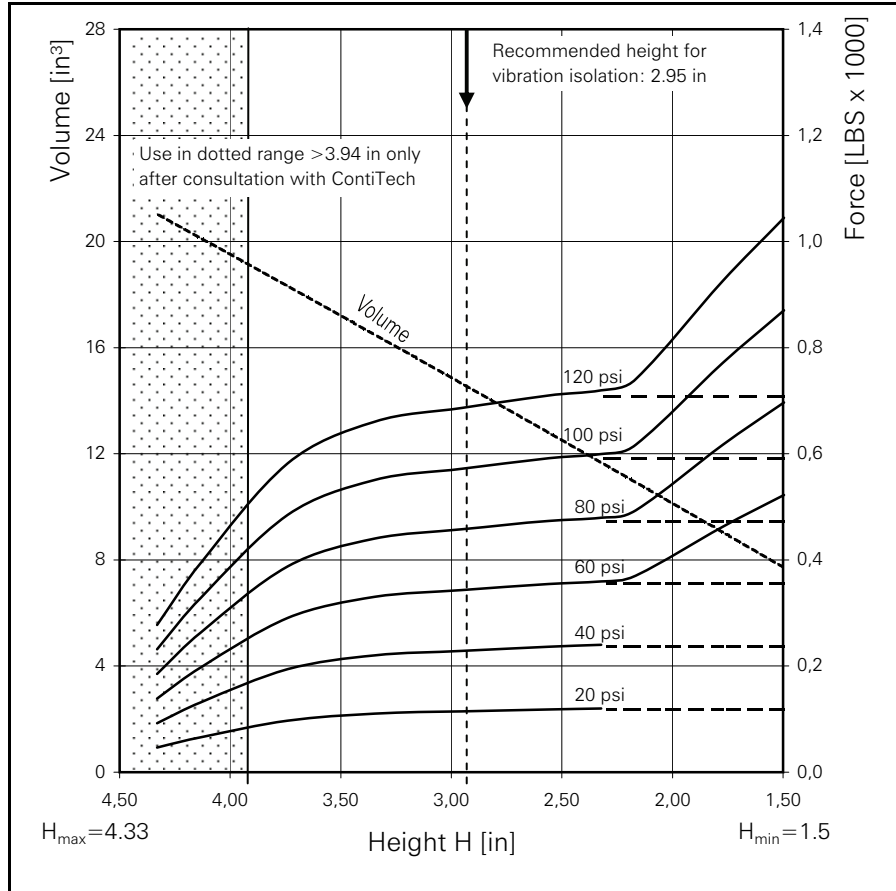
5/8-11 UNC = 8-10 LBxFT

1/8 NPT = Handtight plus one turn

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



SK 37-8 P02



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
3	Epichorohydrin

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 34 lbs
Overall weight	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. V [in ³]
Force (Load) [lbs]	230	340	460	570	690		15
Spring rate [lbs/in]	159	221	272	310	363		
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	680	14.9
	2.5	120	240	360	470	590	710	12.5



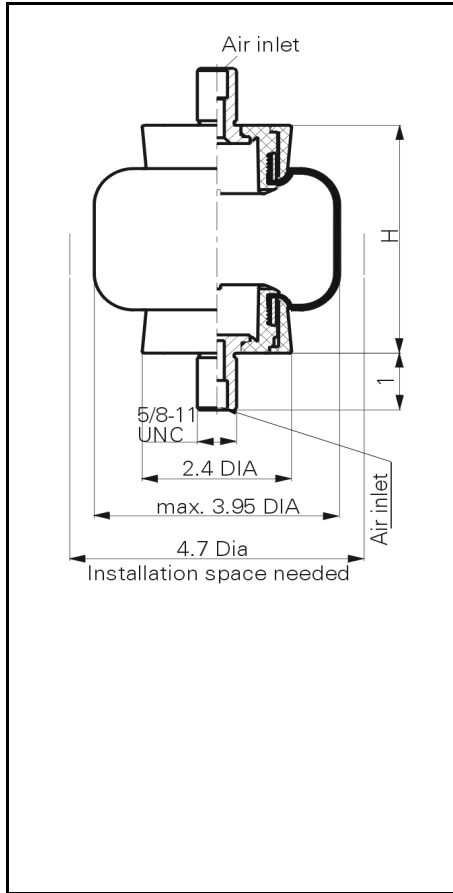
Service instructions

5/16-18 UNC = 2-4 LBxFT

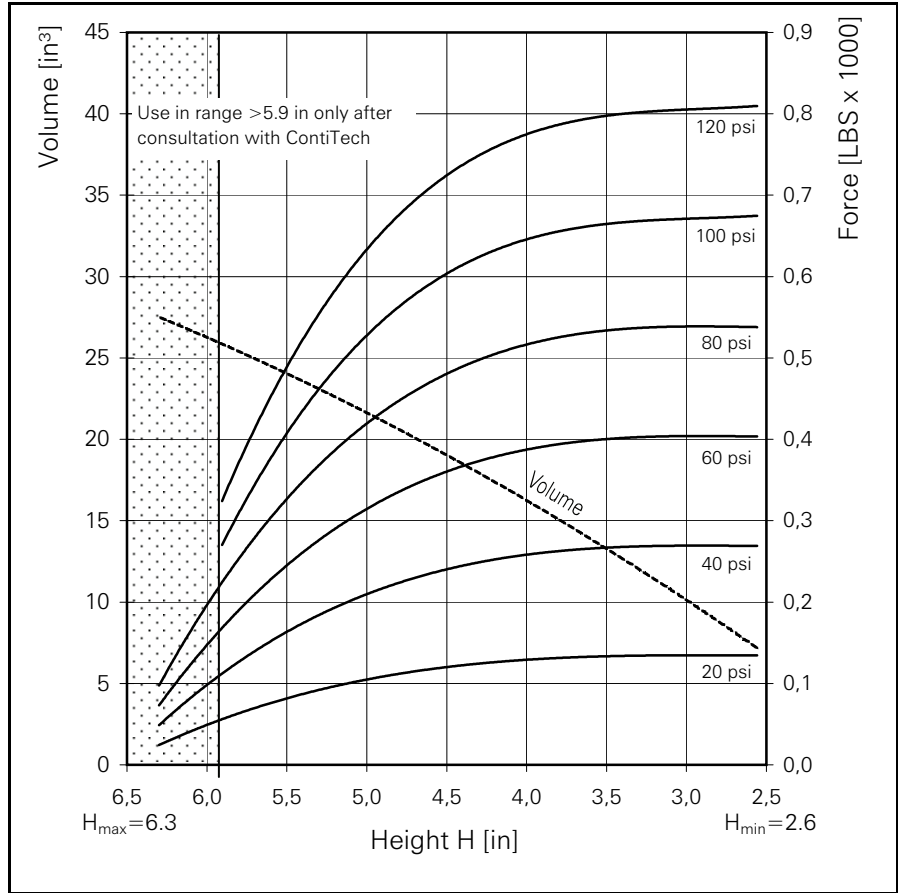
5/8-11 UNC = 8-10 LBxFT

1/8 NPT = Handtight plus one turn

Measuring procedure: Room temperature / Force-height- data quasistatic / Dynamic data at 1 Hz



SK 37-10 P02



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	5 psi
Return force to min. height	≤ 34 lbs
Overall weight	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]	5.5	80	160	240	320	400	480	24
	5.0	110	210	320	430	530	640	22
	4.5	120	240	360	480	600	720	19
	4.0	130	260	390	520	650	780	16
	3.5	130	260	400	530	660	790	13
	3.0	130	270	400	540	670	800	10



Service instructions

5/8-11 UNC = 8-10 LBxFT

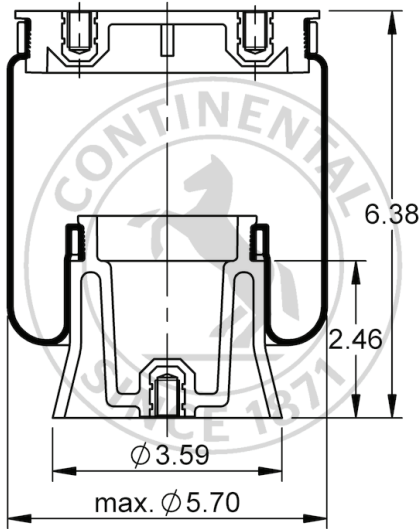
1/8 NPT = Handtight plus one turn

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz

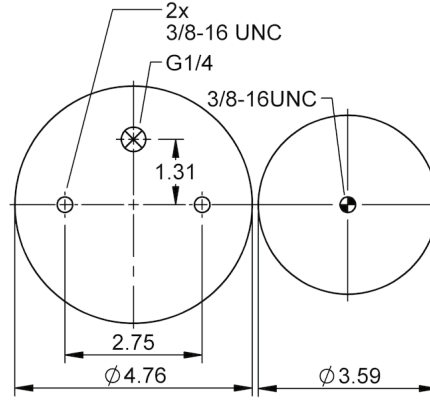
SK 68-10 P21

Order No. 72596

Cross section view



Top view / Bottom view



top plate
 3/8-16 UNC = 531 lbf in
air inlet
 G1/4 = 177 lbf in
piston
 3/8-16 UNC = 531 lbf in

○ threaded hole ● bolt or stud ⊗ air inlet ⊕ combinations stud

Product data

geometrical/physical data

min. requ. space (diameter)	5.9 in
design height	6.38 in
compression travel	-2 in
extension travel	2 in
volume (measured at psi)	in ³
weight	1.8 lbs

material of piston and plate

piston	Plastik
plate	Plastik

dynamic characteristics - suspension operation

operating pressure range	14.5 - 102 psi
load range	112 - 1080 lbs

static characteristics - lifting operation

operating pressure range	- psi
load range	- lbs

pressure dependent characteristics

pressure [psi]	14.5	43.5	72.5	102
load [lbs]	112	450	764	1080
spring rate [lbs/in]				
nat. frequ. [cpm]	84			

cross references

Firestone no. (bellows)	110/70
Firestone system no.	W21-760-9001

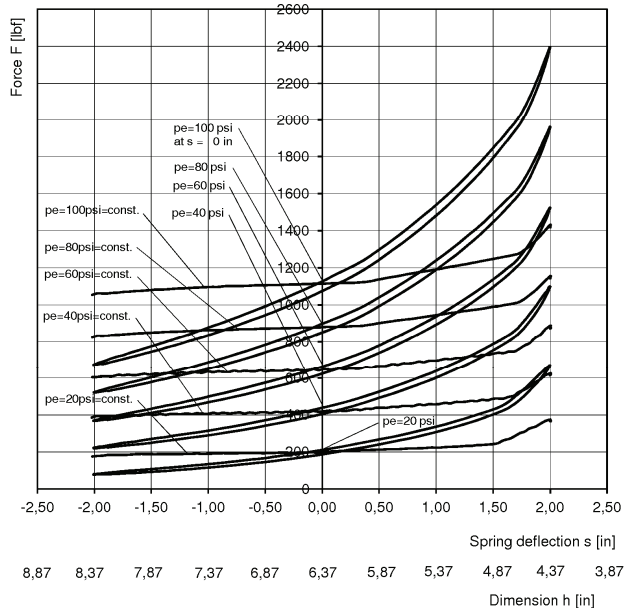
Compression / extension travel, load curves and pressure dependent characteristics are valid for the given design height only.

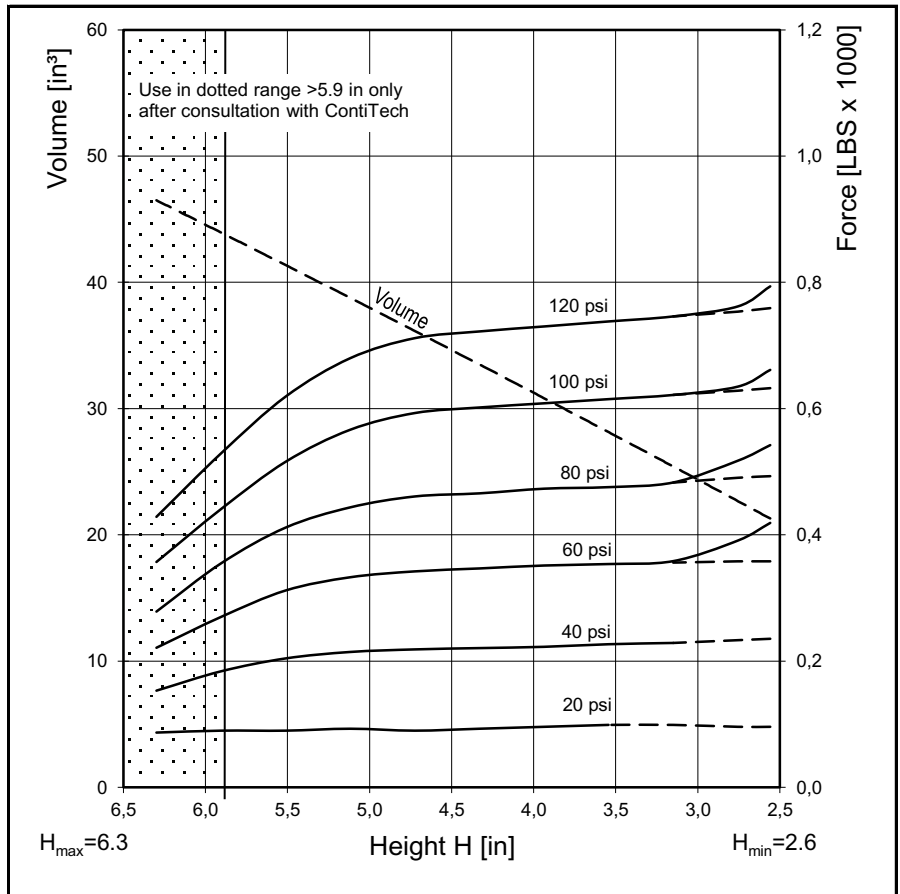
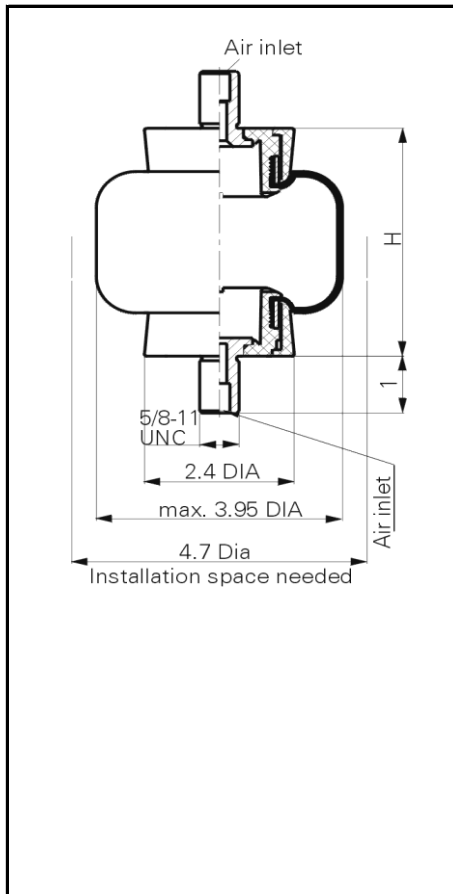
Load displacement diagram

Spring characteristics (P2FE5143/3)

at room temperature

Tolerance of isobaric curves: 5% of the static value in design position





SZ 37-10 P02

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
1	1/8 NPT

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	13 psi
Return force to min. height	≤ 99 lbs
Overall weight	0.8 lbs

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in] 5.5	100	210	310	410	520	620	41.0
5.0	120	230	350	470	580	700	38.0
4.5	120	240	360	480	600	720	34.6
4.0	120	240	360	490	610	730	31.0
3.5	120	250	370	490	620	740	27.8
3.0	120	250	370	500	620	750	25.0

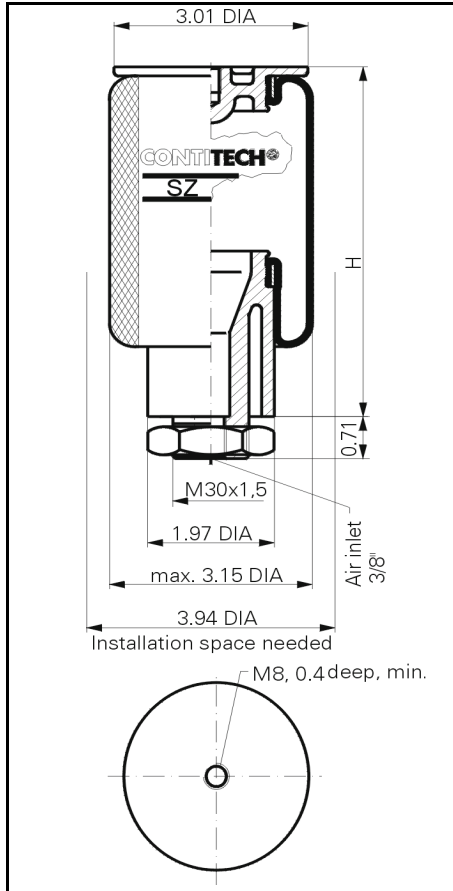


Service instructions

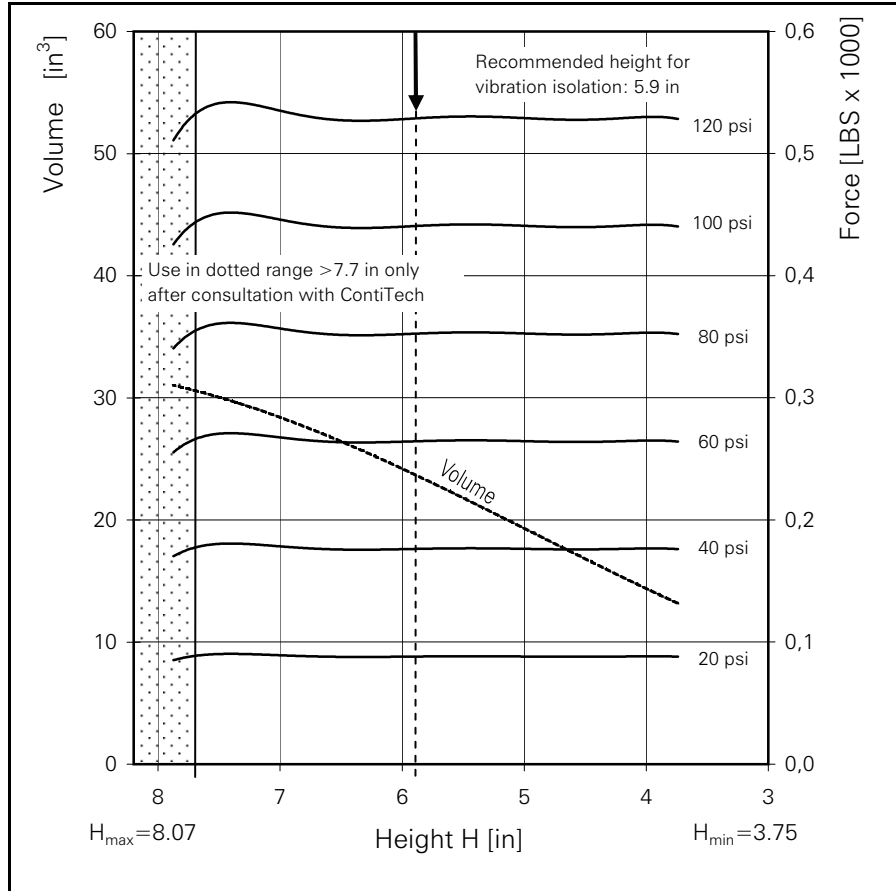
5/8-11 UNC = 8-10 LBxFT

1/8 NPT = Handtight plus one turn

Measuring procedure: Room temperature / Force- height- data quasistatic / Dynamic data at 1 Hz



SZ 35-11



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
8	G38

Option	
0	Standard
3	Epichorohydrin

Technical data

Min. pressure	13.05 psi
Return force to min. height	≤ 79 lbs
Overall weight with nut	0.9 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. V [in ³]
Force (Load) [lbs]	180	260	350	440	530		24
Spring rate [lbs/in]	2.3	2.1	2.1	2.0	2.0		
Natural frequency [Hz]	2.2	2.1	2.0	2.0	2.0		

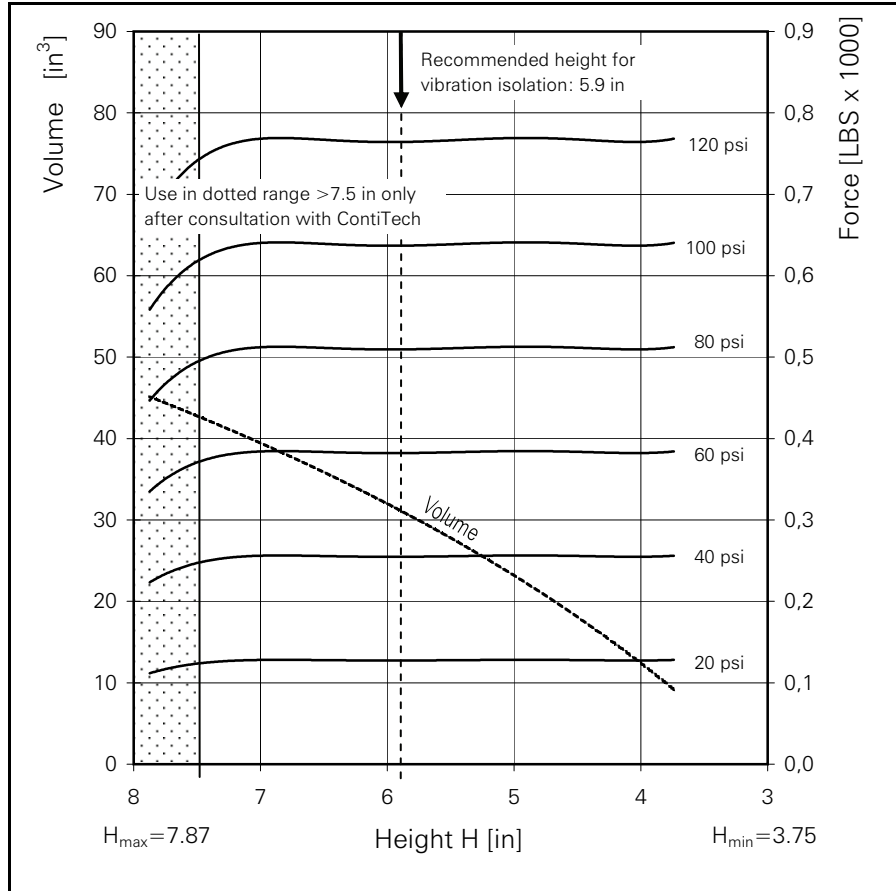
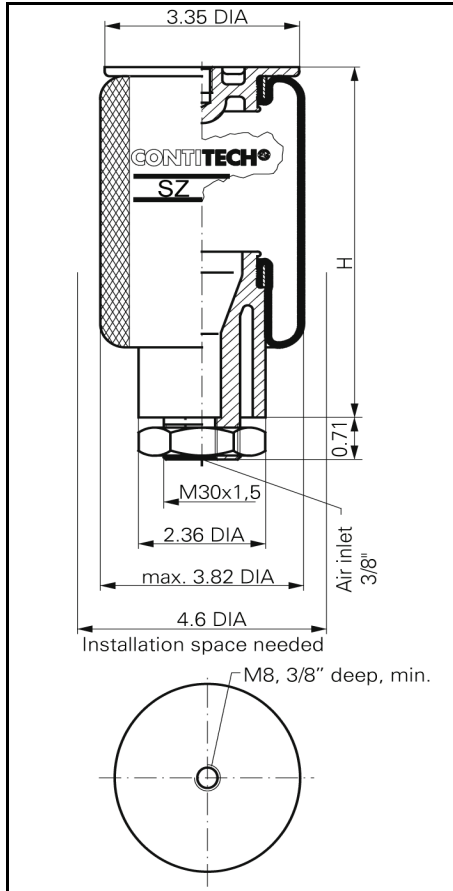
Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]
Height H [in]	7	180	270	360	450	530	28
	6	90	180	260	350	440	24
	5	90	180	260	350	440	19
	4	90	180	260	350	440	14



Service instructions
 M8 = 4 LBxFT
 M30x1,5 = 28 LBxFT
 G 3/8 = 7 LBxFT



SZ 50-11

Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
8	G38

Option	
0	Standard
3	Epichorohydrin

Technical data

Min. pressure	13.05 psi
Return force to min. height	≤ 101 lbs
Overall weight with nut	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. V [in ³]
Force (Load) [lbs]	260	380	510	640	770		31
Spring rate [lbs/in]	97	142	186	228	272		
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. V [in ³]
Height H [in]	7	130	260	380	510	640	39
	6	130	260	380	510	640	32
	5	130	260	380	510	640	25
	4	130	260	380	510	640	18

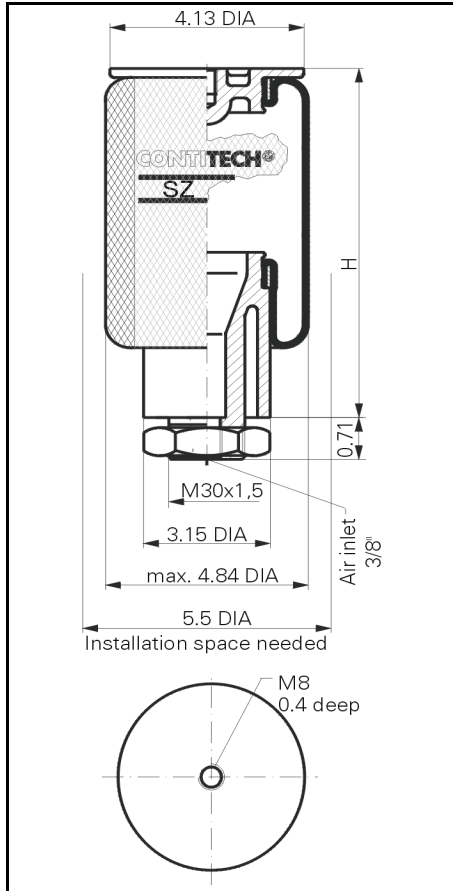


Service instructions

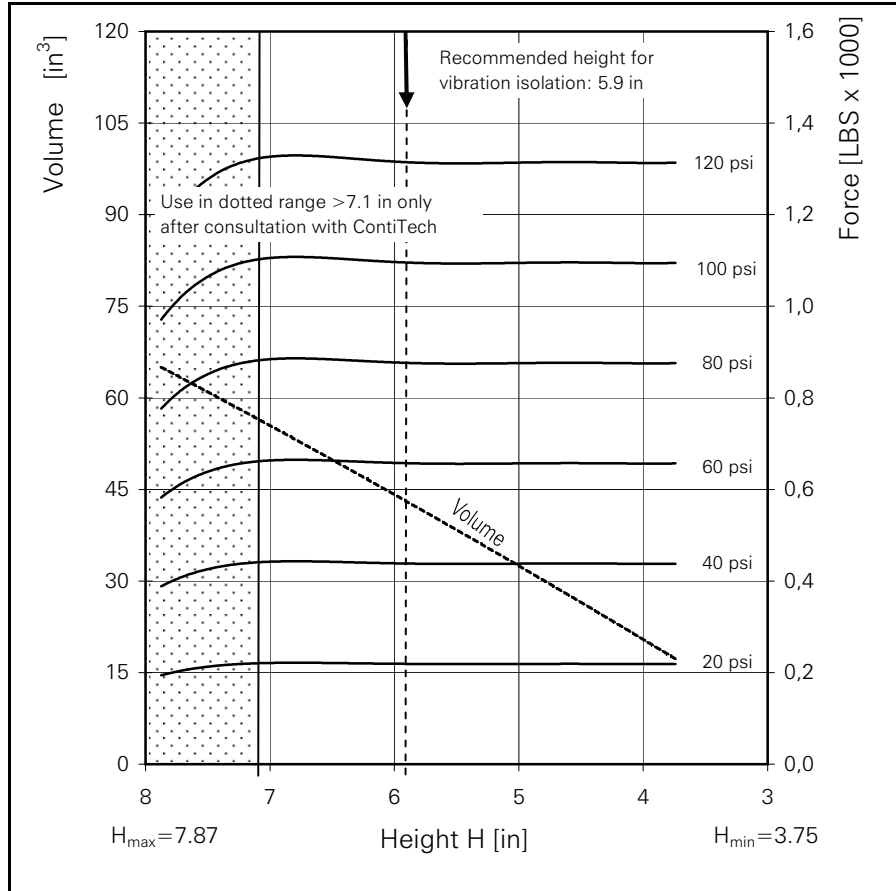
M8 = 4 LBxFT

M30x1,5 = 28 LBxFT

G 3/8 = 7 LBxFT



SZ 70-11



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
8	G38

Option	
0	Standard
3	Epichorohydrin

Technical data

Min. pressure	0 psi
Return force to min. height	≤ 157 lbs
Overall weight with nut	1.5 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. V [in ³]
Force (Load) [lbs]	440	660	880	1100	1310		43
Spring rate [lbs/in]	176	257	334	405	481		
Natural frequency [Hz]	2.1	2.0	2.0	1.9	1.9		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol. V [in ³]
Height H [in]	7	220	450	670	890	1110	56
	6	220	440	660	880	1100	44
	5	220	440	660	880	1100	32
	4	220	440	660	880	1090	21

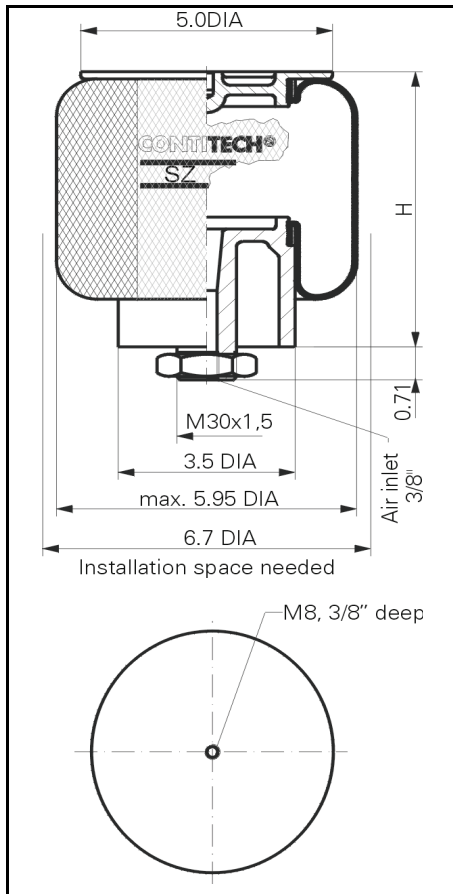


Service instructions

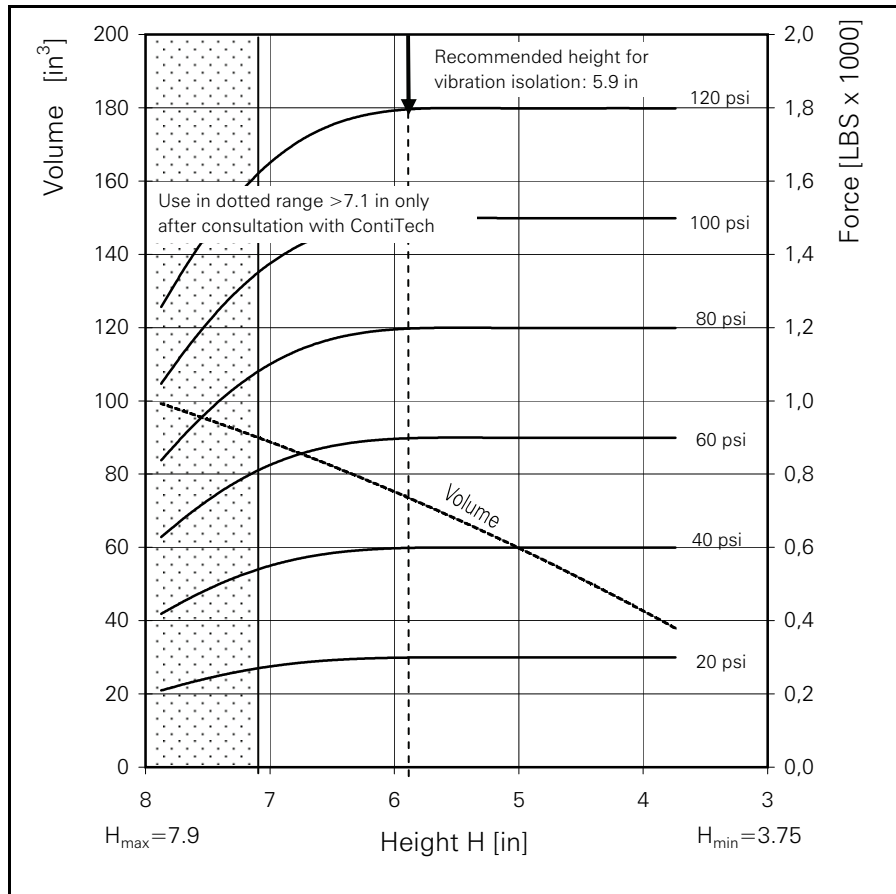
M8 = 4 LBxFT

M30x1,5 = 28 LBxFT

G 3/8 = 7 LBxFT



SZ 100-11



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
8	G38

Option	
0	Standard
3	Epichlorohydrin

Technical data

Min. pressure	13.1 psi
Return force to min. height	≤ 202 lbs
Overall weight with nut	1.6 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. V [in ³]
Force (Load) [lbs]	600	900	1200	1500	1800		73
Spring rate [lbs/in]	228	322	413	492	582		
Natural frequency [Hz]	2.0	1.9	1.9	1.8	1.8		

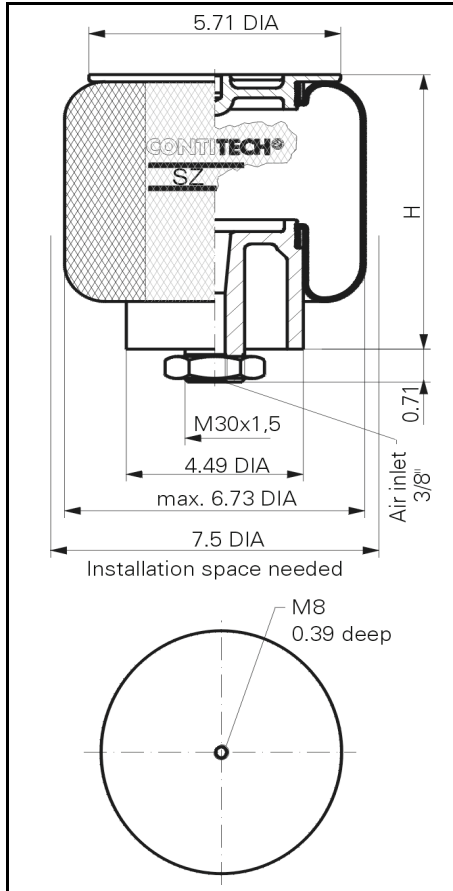
Pneumatic application - static characteristic values

Force F [lbs]

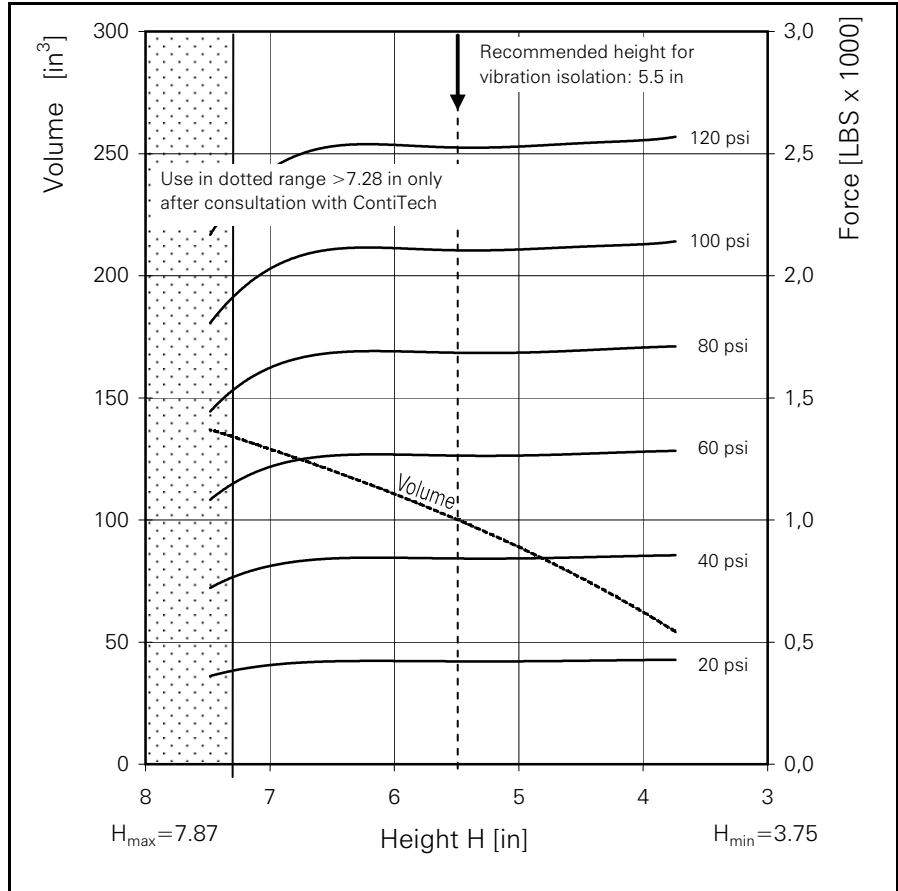
Pressure p [psi]	20	40	60	80	100	120	Vol [in ³]	
Height H [in]	7.0	270	550	820	1100	1370	1650	90
	6.0	300	600	900	1190	1490	1790	75
	5.0	300	600	900	1200	1500	1800	59
	4.0	300	600	900	1200	1500	1800	43



Service instructions
 M8 = 4 LBxFT
 M30x1,5 = 28 LBxFT
 G 3/8 = 7 LBxFT



SZ 140-11



Force-height diagram

Purchase order data

Port	
0	Bead Ring or Bellows Only
8	G38

Option	
0	Standard
3	Epichorohydrin

Technical data

Min. pressure	13.1 psi
Return force to min. height	≤ 292 lbs
Overall weight with nut	2.2 lbs

Vibration isolation - dynamic characteristic values

Design height H: recommended 5.5 inch, lateral guidance necessary

Pressure p [psi]	40	60	80	100	120		Vol. V [in ³]
Force (Load) [lbs]	840	1260	1680	2090	2510		98
Spring rate [lbs/in]	425	602	781	950	1134		
Natural frequency [Hz]	2.3	2.2	2.2	2.1	2.1		

Pneumatic application - static characteristic values

Force F [lbs]

Pressure p [psi]	20	40	60	80	100	120	Vol. V [in ³]	
Height H [in]	7	400	810	1210	1620	2020	2430	130
	6	420	850	1270	1690	2120	2540	109
	5	420	850	1270	1690	2120	2540	87
	4	430	850	1280	1710	2130	2560	64



Service instructions

M8 = 4 LBxFT

M30x1,5 = 28 LBxFT

G 3/8 = 7 LBxFT



COMPACT[®]
AUTOMATION PRODUCTS

Compact Automation Products, LLC
105 Commerce Way
Westminster, SC 29693
Tel: 864.647.9521
Fax: 864.647.9574
www.compactautomation.com

CAP1267R1

An ITT Company

07/17