

D series

1 convolution



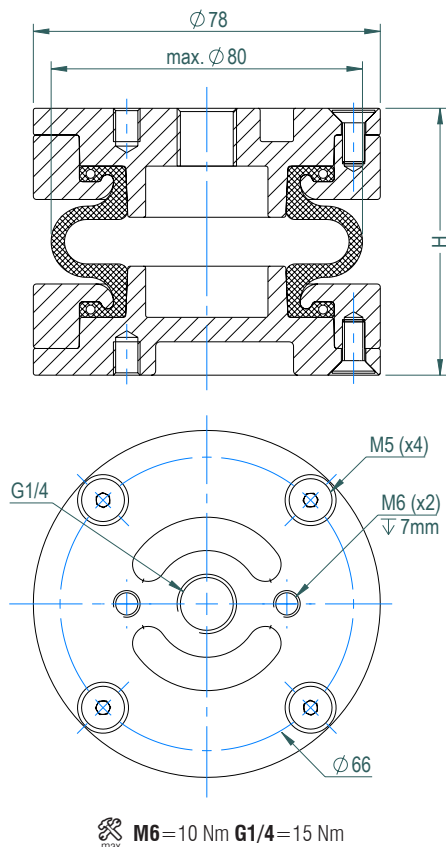
DATA Sheet

D SERIES
Dismountable Design

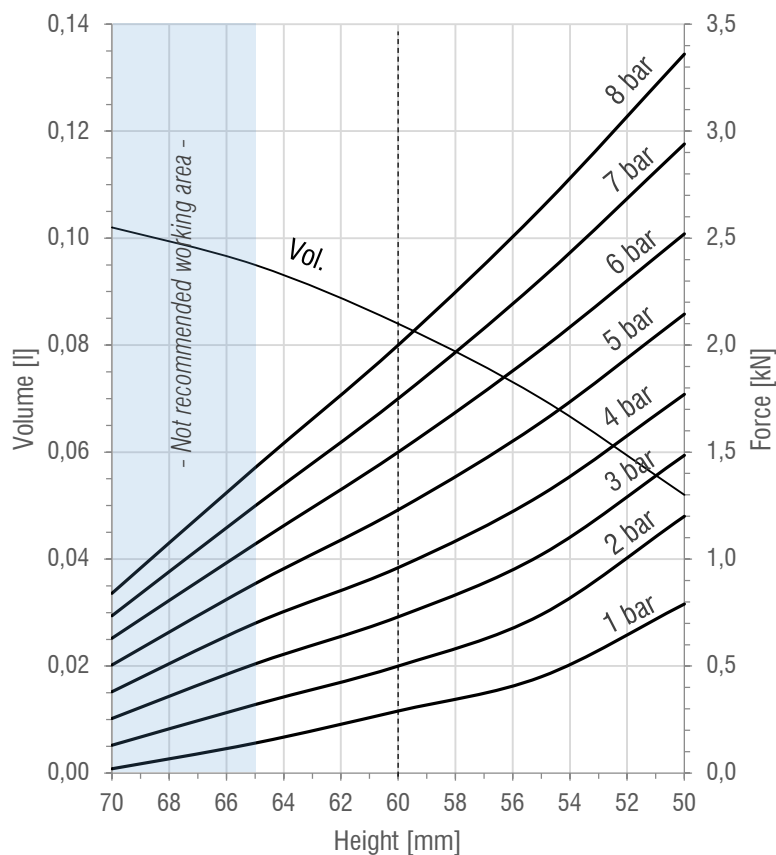
2 3/4" x 1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	70
Max. diameter [mm]	80
Required space diameter [mm]	95
Min. height [mm]	50
Static height [mm]	60
Design height [mm]	60
Max. usable height [mm]	65
Max. stroke [mm]	15
Force to compress to H_{min} at 0 bar [N]	200
Weight [kg]	0,5

REFERENCES

2x1_B	Rubber bellow only
2x1_D	With aluminium end closures

Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	0,73	0,96	1,23	1,50	1,75	0,08
Spring rate [N/mm]	83	94	111	128	148	
Natural frequency [Hz]	5,33	4,95	4,75	4,62	4,61	
Isolation rate at 10 Hz	60,3%	67,5%	70,9%	72,9%	73,1%	

Values at recommended design height H: 60 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	1,49	1,77	2,15	2,52	2,94	0,05
	55	1,02	1,30	1,64	1,98	2,31	0,07
	60	0,73	0,96	1,23	1,50	1,75	0,08
	65	0,51	0,70	0,89	1,07	1,25	0,10

Force values [kN]

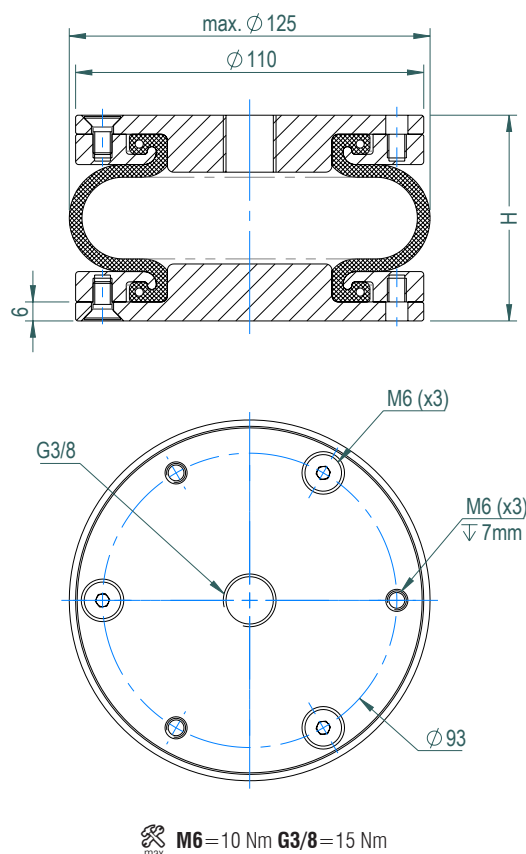
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

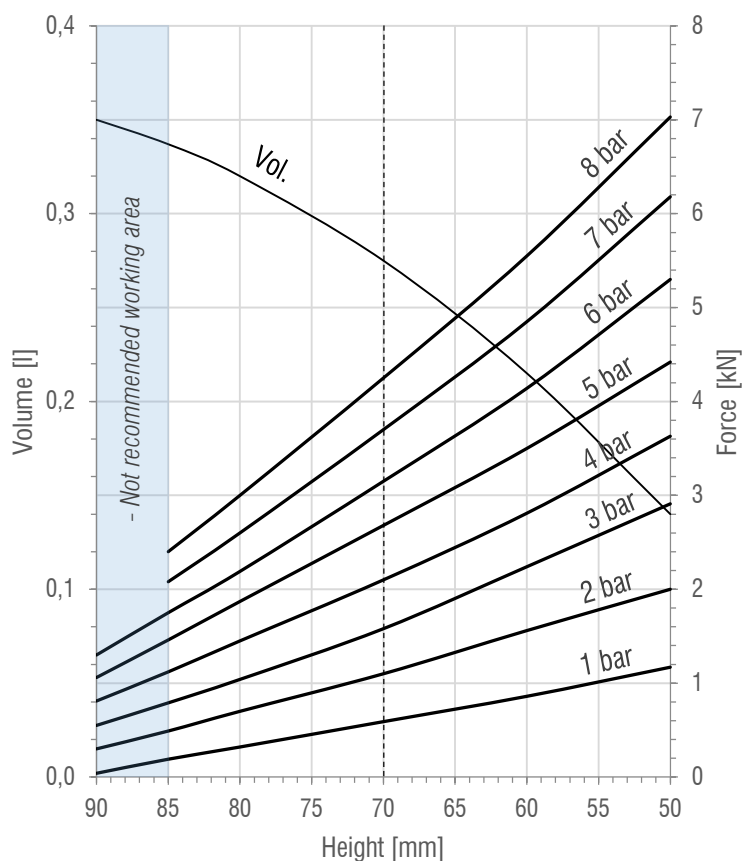
4½"X1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	114
Max. diameter [mm]	125
Required space diameter [mm]	140
Min. height [mm]	50
Static height [mm]	65
Design height [mm]	70
Max. usable height [mm]	85
Max. stroke [mm]	35
Force to compress to H_{min} at 0 bar [N]	120
Weight [kg]	0,8

REFERENCES

4x1_B	Rubber bellow only
4x1_D	With aluminium end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	1,58	2,10	2,68	3,15	3,70	0,28
Spring rate [N/mm]	115	141	170	195	225	
Natural frequency [Hz]	4,26	4,10	3,98	3,94	3,90	
Isolation rate at 10 Hz	77,8%	79,8%	81,2%	81,7%	82,1%	

Values at recommended design height H: 70 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	2,91	3,63	4,42	5,3	6,18	0,14
	60	2,24	2,81	3,5	4,14	4,85	0,22
	70	1,58	2,1	2,68	3,15	3,7	0,28
	80	1,04	1,45	1,87	2,19	2,6	0,32

Force values [kN]

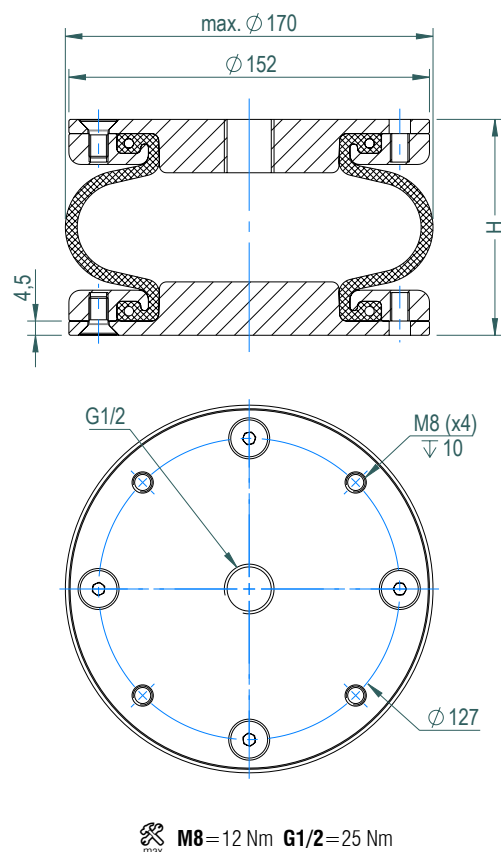
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

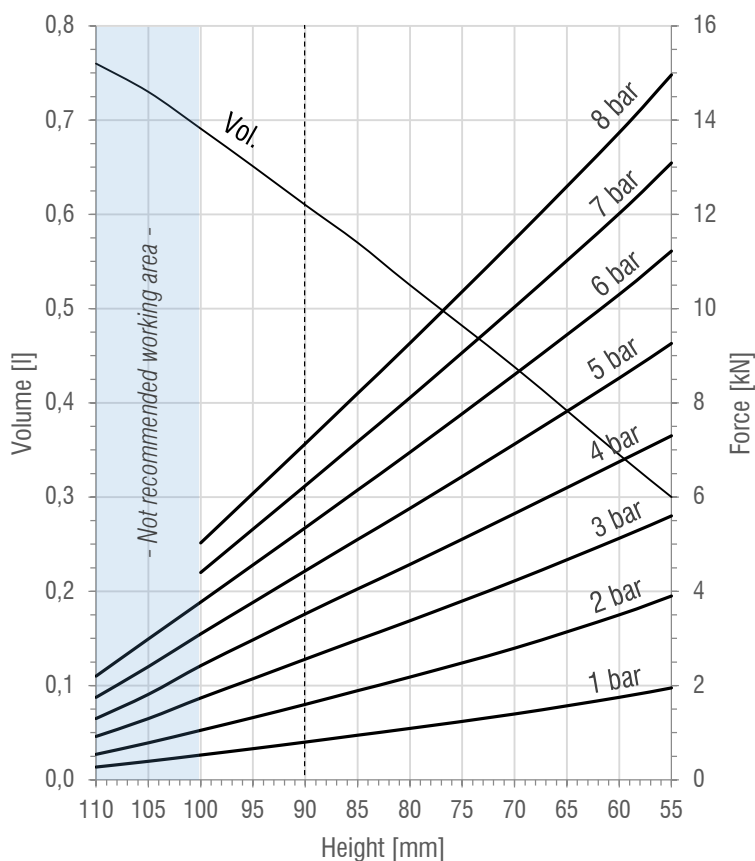
6"x1 AL

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	155
Max. diameter [mm]	170
Required space diameter [mm]	185
Min. height [mm]	55
Static height [mm]	85
Design height [mm]	90
Max. usable height [mm]	100
Max. stroke [mm]	45
Force to compress to H_{min} at 0 bar [N]	200
Weight [kg]	1,8

REFERENCES

6x1_B	Rubber bellow only
6x1_D_AL	With aluminium end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	2,6	3,5	4,4	5,4	6,2	0,6
Spring rate [N/mm]	152	197	242	287	332	
Natural frequency [Hz]	3,86	3,74	3,70	3,66	3,65	
Isolation rate at 10 Hz	82,5%	83,7%	84,2%	84,5%	84,7%	

Values at recommended design height H: 90 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	60	5,1	6,8	8,5	10,3	12,0	0,3
	70	4,2	5,7	7,1	8,6	10,0	0,4
	80	3,4	4,6	5,8	7,0	8,1	0,5
	90	2,6	3,5	4,4	5,4	6,2	0,6
	100	1,7	2,4	3,1	3,8	4,4	0,7

Force values [kN]

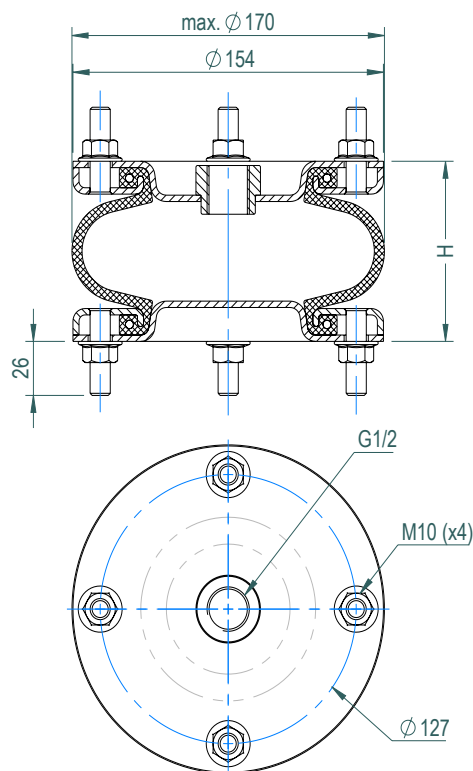
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

6"x1 ST

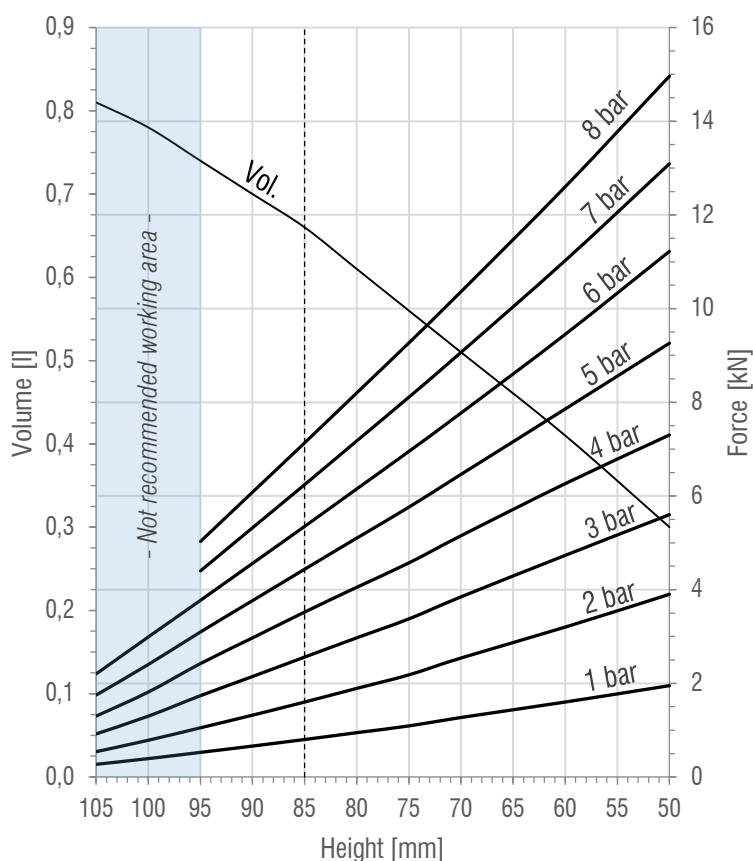
SINGLE
CONVOLUTION

DRAWING



 **M10=25 Nm** **G1/2=25 Nm**

FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	155
Max. diameter [mm]	170
Required space diameter [mm]	185
Min. height [mm]	50
Static height [mm]	80
Design height [mm]	85
Max. usable height [mm]	95
Max. stroke [mm]	45
Force to compress to H_{min} at 0 bar [N]	200
Weight [kg]	2,3

REFERENCES

6x1_B	Rubber bellow only
6x1_D_ST	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	2,6	3,5	4,4	5,4	6,2	0,7
Spring rate [N/mm]	156	202	249	294	340	
Natural frequency [Hz]	3,91	3,79	3,74	3,71	3,69	
Isolation rate at 10 Hz	82,0%	83,2%	83,7%	84,0%	84,2%	

Values at recommended design height H: 85 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	5,6	7,3	9,3	11,2	13,1	0,3
	60	4,7	6,3	7,9	9,5	11,0	0,4
	70	3,8	5,2	6,5	7,8	9,1	0,5
	80	3,0	4,1	5,1	6,2	7,2	0,6
	90	2,1	3,0	3,8	4,6	5,3	0,7
	100	1,3	1,8	2,4	3,0	0,0	0,8

Force values [kN]

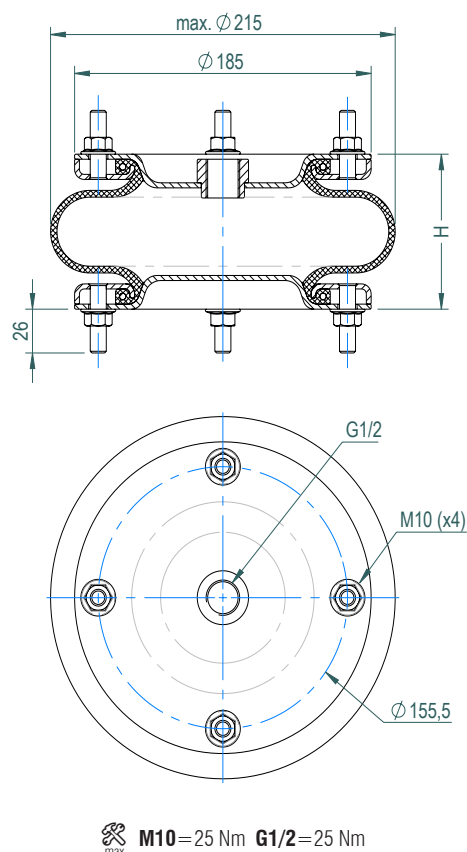
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

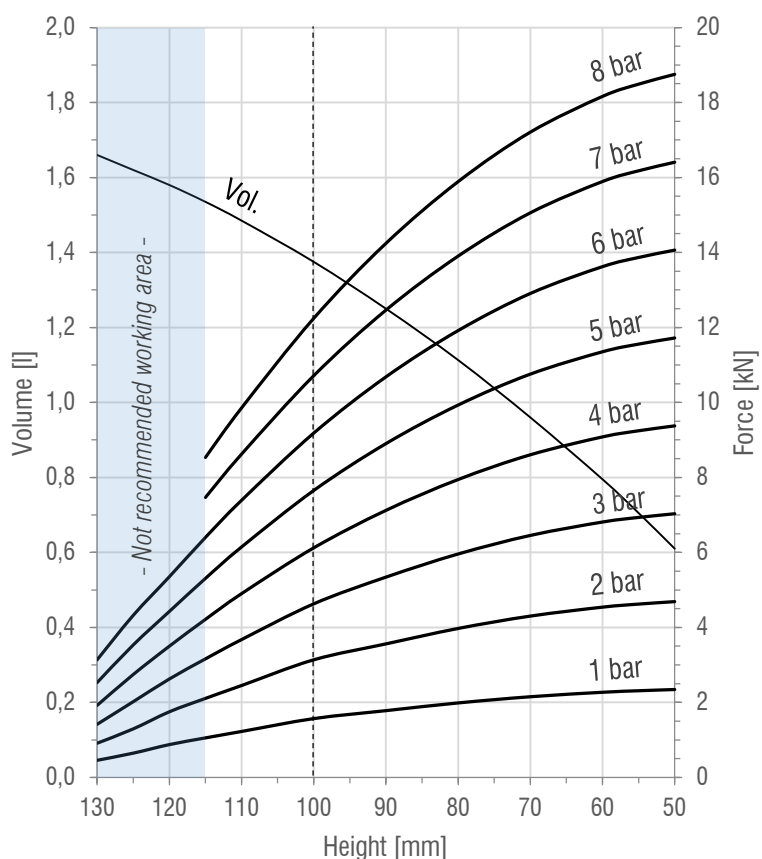
8"x1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	202
Max. diameter [mm]	215
Required space diameter [mm]	230
Min. height [mm]	50
Static height [mm]	85
Design height [mm]	100
Max. usable height [mm]	115
Max. stroke [mm]	65
Force to compress to H_{min} at 0 bar [N]	160
Weight [kg]	3,2

REFERENCES

8x1_B	Rubber bellow only
8x1_D	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	4,6	6,1	7,7	9,2	10,7	1,4
Spring rate [N/mm]	158	205	250	296	342	
Natural frequency [Hz]	2,92	2,89	2,86	2,84	2,83	
Isolation rate at 10 Hz	90,7%	90,9%	91,1%	91,2%	91,3%	

Values at recommended design height H: 100 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	7,0	9,4	11,7	14,1	16,4	0,6
	60	6,8	9,1	11,4	13,6	15,9	0,8
	70	6,5	8,6	10,8	12,9	15,1	1,0
	80	6,0	7,9	9,9	11,9	13,9	1,1
	90	5,3	7,1	8,9	10,7	12,5	1,3
	100	4,6	6,1	7,7	9,2	10,7	1,4
	110	3,7	4,9	6,1	7,4	8,6	1,5

Force values [kN]

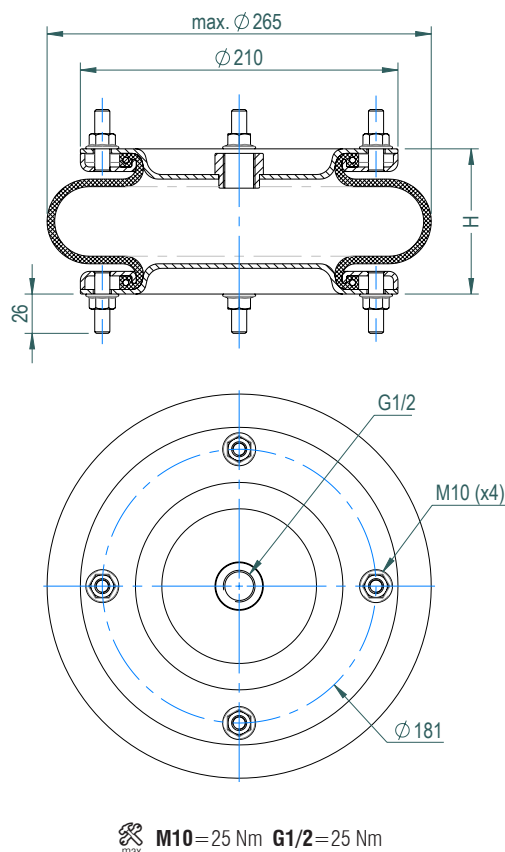
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

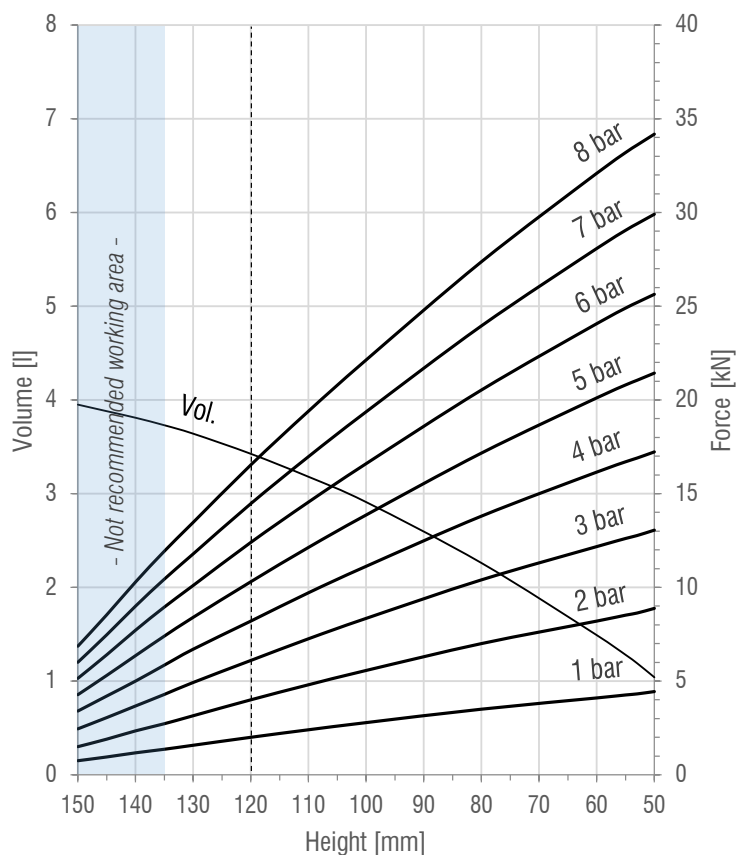
10"x1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	252
Max. diameter [mm]	265
Required space diameter [mm]	295
Min. height [mm]	50
Static height [mm]	90
Design height [mm]	120
Max. usable height [mm]	135
Max. stroke [mm]	85
Force to compress to H_{min} at 0 bar [N]	70
Weight [kg]	3,95

REFERENCES

10x1_B	Rubber bellow only
10x1_D	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	6,1	8,2	10,3	12,4	14,5	3,4
Spring rate [N/mm]	195	250	306	362	419	
Natural frequency [Hz]	2,83	2,76	2,72	2,70	2,69	
Isolation rate at 10 Hz	91,3%	91,7%	92,0%	92,1%	92,2%	

Values at recommended design height H: 120 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	13,1	17,2	21,4	25,6	29,9	1,0
	60	12,2	16,2	20,1	24,1	28,1	1,5
	80	10,4	13,8	17,2	20,5	24,0	2,3
	100	8,3	11,1	13,9	16,6	19,4	2,9
	110	7,3	9,7	12,1	14,6	17,0	3,2
	120	6,1	8,2	10,3	12,4	14,5	3,4
	130	4,9	6,7	8,4	10,1	11,8	3,6

Force values [kN]

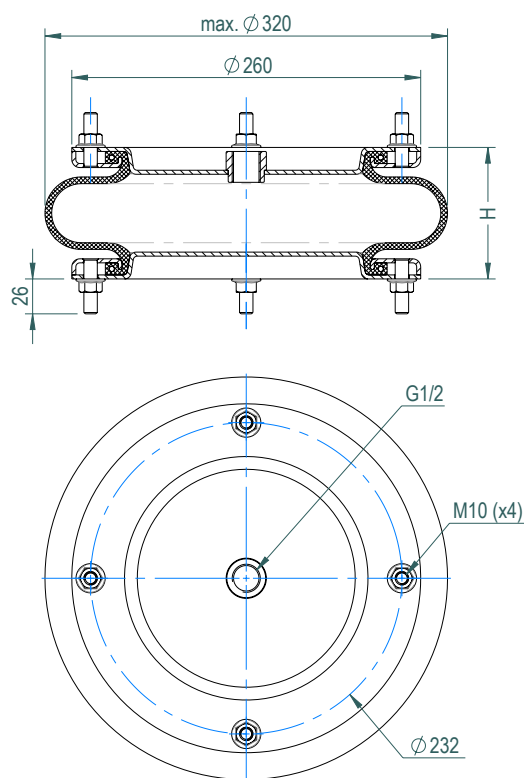
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

12"x1

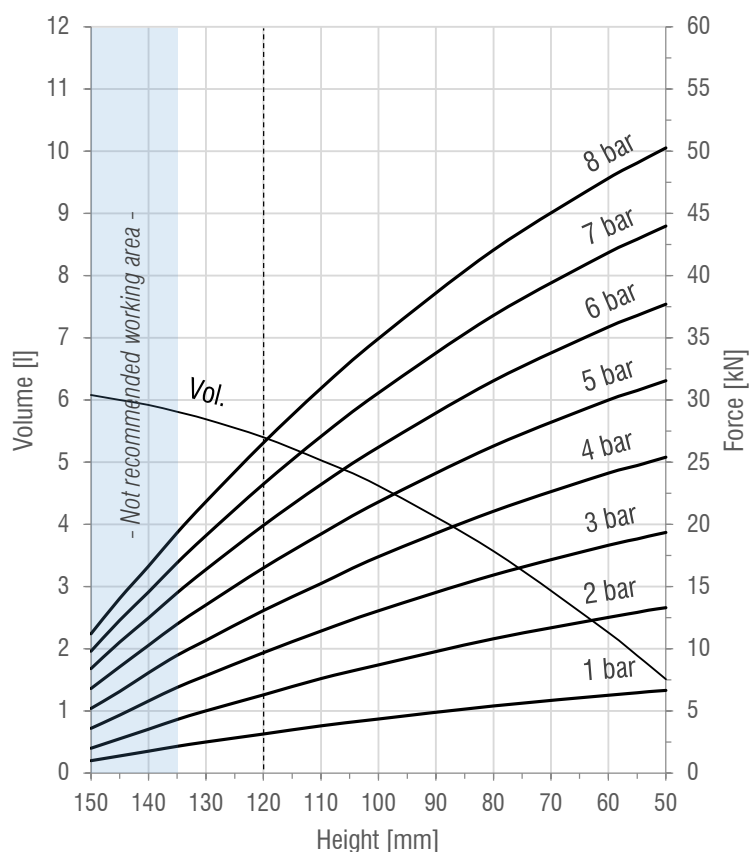
SINGLE
CONVOLUTION

DRAWING



 **M10** = 25 Nm **G1/2** = 25 Nm

FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	305
Max. diameter [mm]	320
Required space diameter [mm]	340
Min. height [mm]	50
Static height [mm]	95
Design height [mm]	120
Max. usable height [mm]	135
Max. stroke [mm]	85
Force to compress to H_{min} at 0 bar [N]	120
Weight [kg]	5,4

REFERENCES

12x1_B	Rubber bellow only
12x1_D	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	9,7	13,1	16,5	19,9	23,2	5,4
Spring rate [N/mm]	294	373	460	548	634	
Natural frequency [Hz]	2,76	2,67	2,64	2,62	2,61	
Isolation rate at 10 Hz	91,8%	92,3%	92,5%	92,6%	92,7%	

Values at recommended design height H: 120 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	50	19,4	25,4	31,6	37,7	44,0	1,5
	60	18,3	24,1	30,0	35,9	41,8	2,3
	80	15,9	21,1	26,3	31,5	36,8	3,6
	100	13,1	17,4	21,8	26,2	30,6	4,6
	110	11,4	15,2	19,2	23,2	27,1	5,0
	120	9,7	13,1	16,5	19,9	23,2	5,4
	130	7,8	10,7	13,5	16,4	19,1	5,7

Force values [kN]

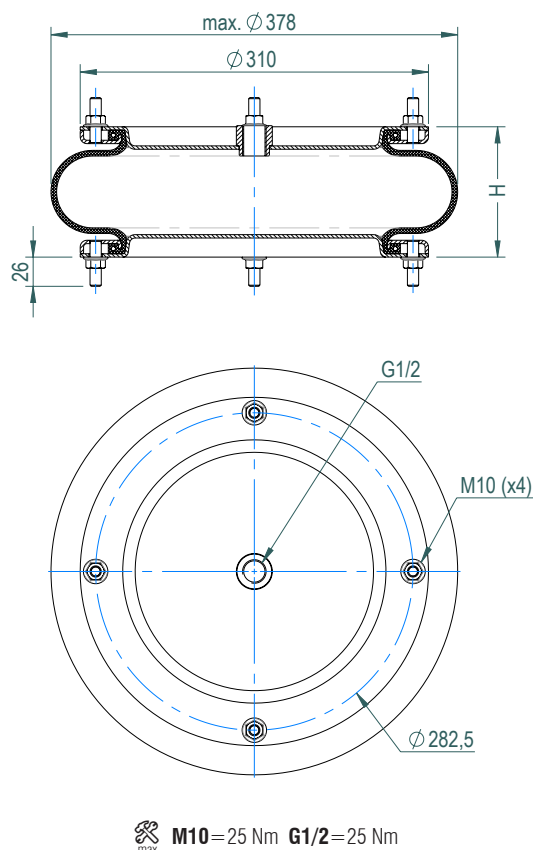
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

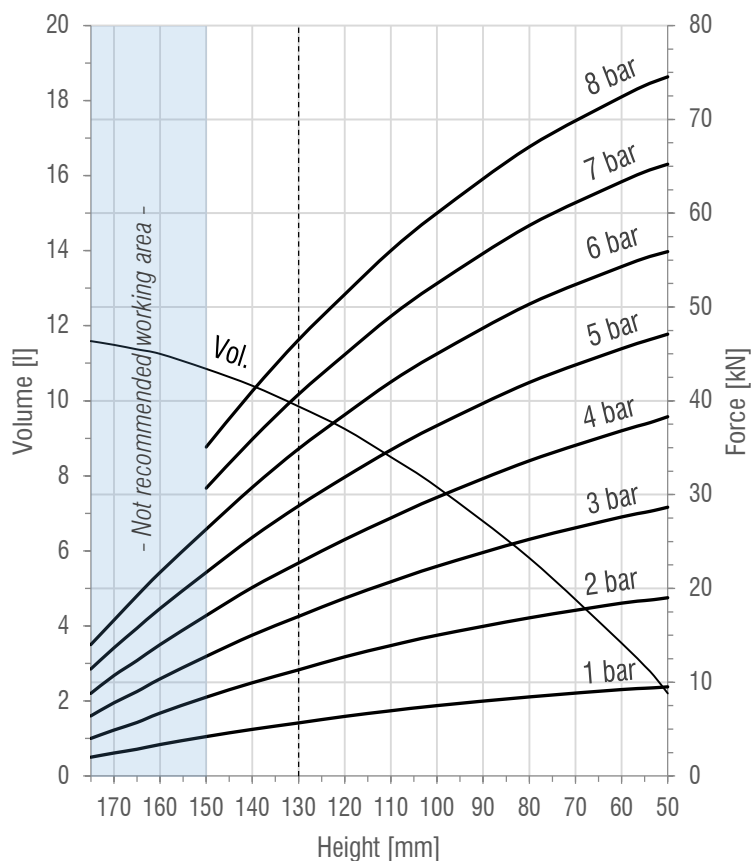
14½"x1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	365
Max. diameter [mm]	380
Required space diameter [mm]	405
Min. height [mm]	50
Static height [mm]	110
Design height [mm]	130
Max. usable height [mm]	150
Max. stroke [mm]	100
Force to compress to H_{min} at 0 bar [N]	90
Weight [kg]	7,36

REFERENCES

14x1_B	Rubber bellow only
14x1_D	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	17,0	22,7	28,8	34,9	40,7	9,9
Spring rate [N/mm]	384	489	605	720	832	
Natural frequency [Hz]	2,38	2,32	2,29	2,27	2,26	
Isolation rate at 10 Hz	94,0%	94,3%	94,5%	94,6%	94,6%	

Values at recommended design height H: 130 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	60	27,6	36,8	45,6	54,3	63,4	3,5
	80	25,2	33,6	42,0	50,3	58,7	5,8
	100	22,4	29,7	37,4	45,0	52,5	7,7
	120	19,0	25,2	31,9	38,5	44,9	9,3
	140	15,0	20,1	25,4	30,8	35,9	10,4
	150	12,7	17,1	21,7	26,3	30,7	10,9

Force values [kN]

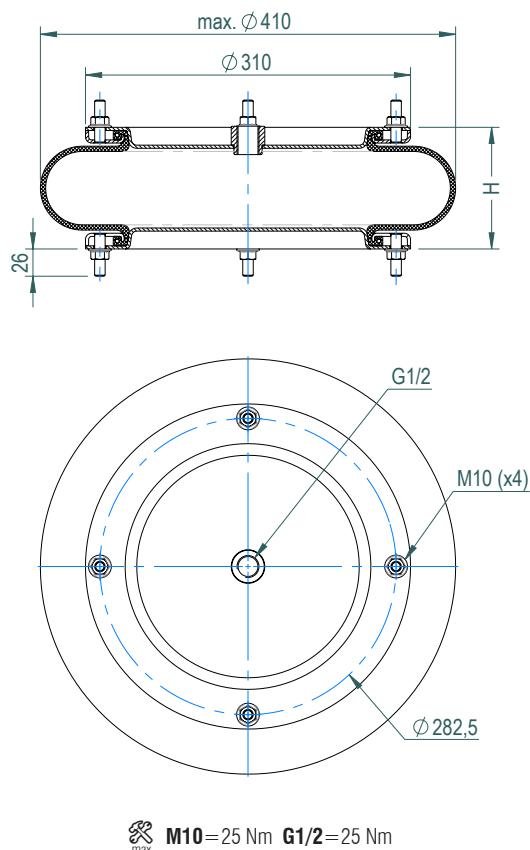
All Volume [l] values at 7 bar

D SERIES
Dismountable Design

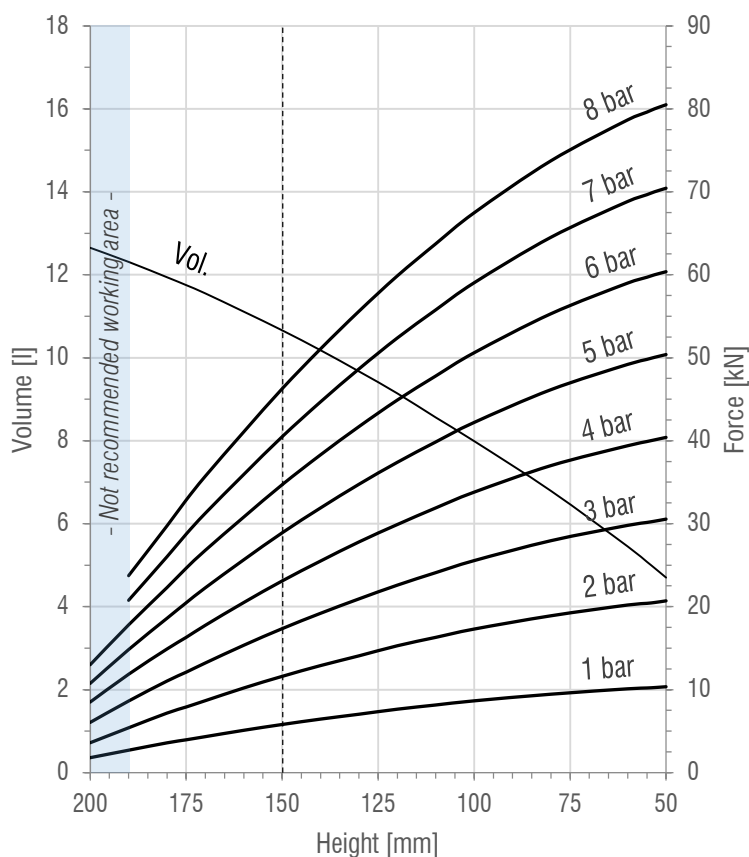
16"x1

SINGLE
CONVOLUTION

DRAWING



FORCE-HEIGHT CHART



TECHNICAL DATA

PRODUCT CHARACTERISTICS

Static diameter [mm]	400
Max. diameter [mm]	410
Required space diameter [mm]	435
Min. height [mm]	50
Static height [mm]	110
Design height [mm]	150
Max. usable height [mm]	190
Max. stroke [mm]	140
Force to compress to H_{min} at 0 bar [N]	50
Weight [kg]	7,54

REFERENCES

16x1_B	Rubber bellow only
16x1_D	With steel end closures

Designs available with stainless steel and high temperature rubber compounds. Additional designs on request.

DYNAMIC CHARACTERISTICS FOR USE AS ISOLATOR

Pressure [bar]	3	4	5	6	7	Vol. [l]
Load [kN]	17,4	23,1	28,9	34,7	40,5	10,7
Spring rate [N/mm]	334	426	524	622	719	
Natural frequency [Hz]	2,19	2,15	2,13	2,12	2,11	
Isolation rate at 10 Hz	94,9%	95,2%	95,3%	95,3%	95,4%	

Values at recommended design height H: 150 mm -----

STATIC CHARACTERISTICS FOR USE AS ACTUATOR

Pressure [bar]		3	4	5	6	7	Vol. [l]
Height H [mm]	60	29,8	39,4	49,2	59,0	68,8	5,5
	80	28,0	37,0	46,2	55,3	64,5	6,8
	100	25,6	33,8	42,2	50,6	59,0	8,0
	120	22,6	29,9	37,4	44,9	52,4	9,1
	140	19,2	25,5	31,9	38,3	44,7	10,2
	160	15,4	20,5	25,7	30,8	35,9	11,1
	180	11,0	14,9	18,6	22,3	26,0	11,9

Force values [kN]

All Volume [l] values at 7 bar