



Pure-Flo® & EnviZion® High Purity Diaphragm Valves

Product Selection Guide



ITT

ENGINEERED FOR LIFE

Advantage[®] 2.1 Actuator

P The Advantage 2.1 actuator is the latest evolution in performance of the time-tested Advantage actuator series, the mainstay of the bioprocessing industry for the past 20 years. The Advantage 2.1 has an innovative patent pending compressor attachment method that allows for interchangeability between PTFE and elastomer diaphragms without actuator disassembly.



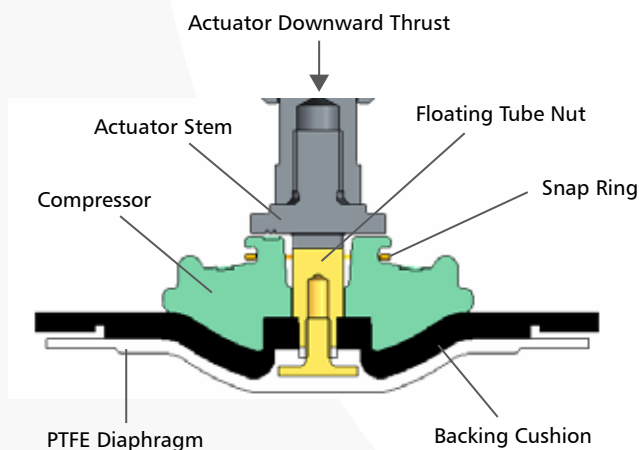
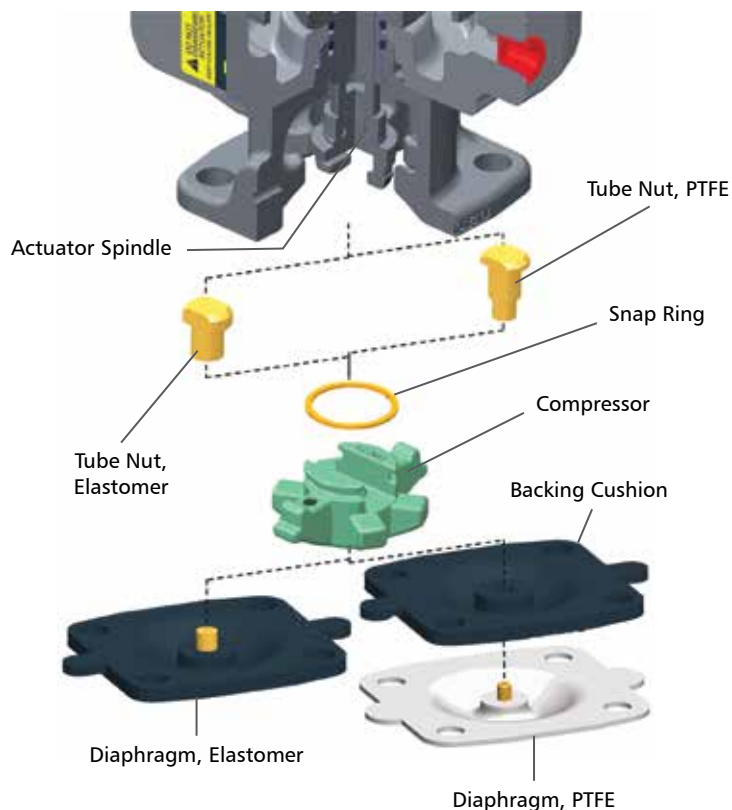
Type: Diaphragm Actuator
Size Range: 0.5–2" (DN15–DN50)
Operating Modes: Fail close, fail open, double acting
Max Service Pressure: 10.3 bar (150 psig)
See sizing charts on pages G3–G5 for exact shutoff pressures
Max Service Temperature: 300°F (150°C)
Max Actuator Chamber Pressure: 6.2 bar (90 psig)
Corrosion Resistance: Resists alcohol, chloride and most caustic washdowns
Autoclavable¹

¹ Steam at 257°F (125°C) for 25 minutes.

Diaphragm Compressor Attachment

Advantage 2.1 and ACS feature a modular compressor design for quick changeover between PTFE and elastomer diaphragms. No actuator disassembly is required for diaphragm type changes. The modular design is compatible with all Pure-Flo diaphragm types.

The modular compressor design features a stainless steel compressor and tube. The key to the modular system is a robust stainless steel tube nut that allows compressor float, ensuring even distribution of actuation closing forces. This concept minimizes diaphragm point loading. Diaphragm change over kits will be available.

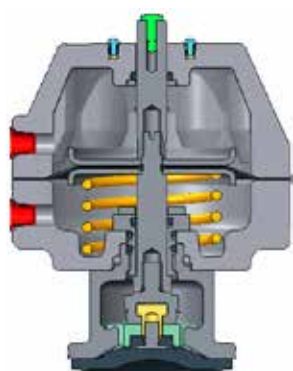


Note: Patent Pending Compressor Design

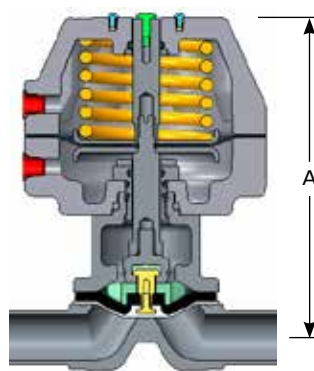
Advantage[®] 2.1 Weights & Dimensions

Dimensions

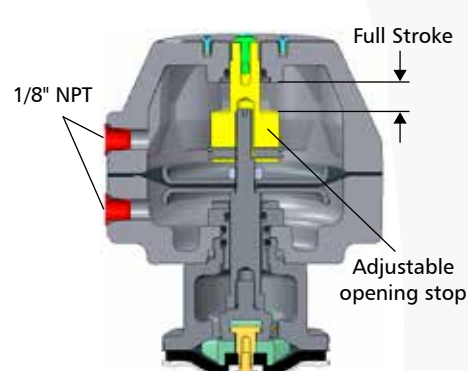
Valve Size		A Valve Open		C		D	
Inch	DN	in	mm	in	mm	in	mm
0.25	6	4.31	109,5				
0.38	10	4.31	109,5				
0.50	15	4.31	109,5				
0.50	15	4.87	123,7	3.34	85	3.00	76
0.75	20	6.06	153,9	4.56	116	3.88	98
1.00	25	6.56	166,6	4.56	116	3.88	98
1.50	40	10.42	264,7	6.41	163	5.94	151
2.00	50	11.16	283,5	6.41	163	5.94	151



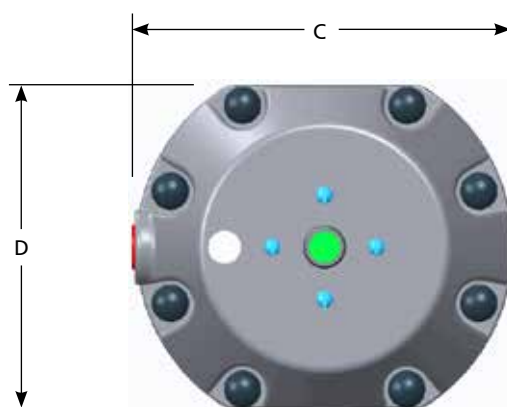
Fail Open
(Spring-to-Open, Air-to-Close)



Fail Close
(Air-to-Open, Spring-to-Close)



Optional Adjustable Opening Stop
(AOS)



Actuator Weights (Less Body)

Valve Size		Double Acting		Fail Open		Fail Close	
Inch	DN	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.
0.50	15	2.00	0,91	2.09	0,95	2.34	1,06
0.75	20	3.69	1,67	3.78	1,71	4.34	1,97
1.00	25	4.47	2,03	4.59	2,08	5.16	2,34
1.50	40	12.10	5,49	12.60	5,71	16.44	7,46
2.00	50	15.16	6,88	15.66	7,10	19.50	8,84

Series 33 Advantage[®] Actuator

P The Series 33 Advantage Actuators extend the size range of the Advantage Actuator product line to 3" and 4" valves. The Series 33 Advantage Actuators have been introduced to further reduce the dimensional envelope and weight for installations in the Pharmaceutical/ Bioprocessing industries. The Series 33 4" Spring to Close actuator is 25% smaller in diameter, has 22% reduction in height and offers a 32% reduction in weight than a comparable 4" Series 47 actuator.

Type: Series 33 Advantage Actuator
Size Range: 3–4" (DN80–DN100)
Operating Modes:
Fail Close*, Fail Open, Double Acting
Max Service Pressure/Temperature:
150 psig (10.34 bar)
300°F (149°C)
External Temperature Limitations:
150°F (66°C)

Actuator Cover Material:
Vinyl-Ester Thermoset
(FDA compliant)

Bonnet Material:
Nylon coated ductile iron
(4 inch); Stainless Steel (3 inch)

Corrosion Resistance:
Resists alcohol, chloride and
most caustic washdowns.
For specific chemical resistance, consult factory.

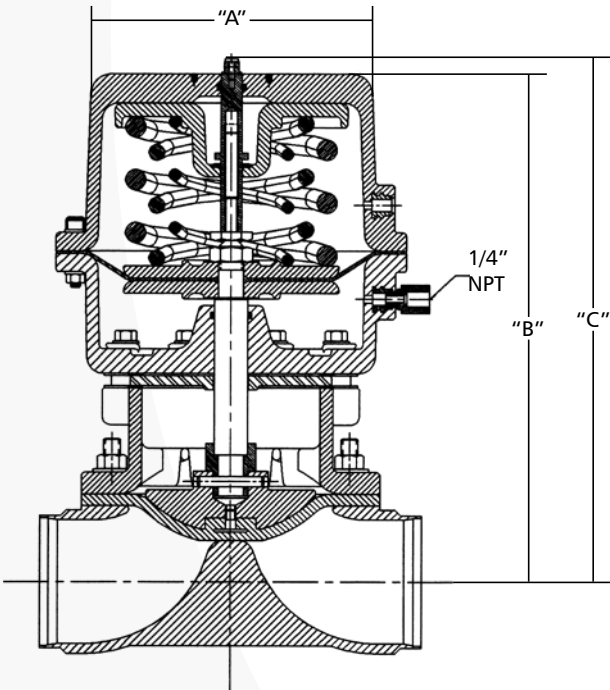
Standard Features:

- Visual position indicator
- O-ring seals
- Switch mounting bolt pattern

Optional Features:

- Hygienic internals
- Solenoids available

*Springs self-contained (Fail close only)
Note: See page G-3 - G-5 for actuator sizing.



Dimensions & Actuator Weights (less body)

Valve Size		A		B		C		Double Acting		Fail Open		Fail Close			
												60#		90#	
Inch	DN	Inch	mm	Inch	mm	Inch	mm	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.
3.00	80	7.95	201,9	14.2	360,7	16.41	416,8	39.00	17,69	42.30	19,19	54.20	24,59	58.00	26,31
4.00	100	7.95	201,9	15.82	401,8	18.00	452,2	44.00	19,96	47.30	21,46	59.20	26,85	63.00	28,58

Series 47 Advantage® Actuator

P The Series 47 Advantage Actuators extend the size range of the Advantage Actuator product line to 3" and 4" valves. Similar to the smaller valve sized Advantage Actuators, the 3–4" series 47 (DN80–DN100) actuator is also diaphragm driven, o-ring furnished and available in three modes of operation. The actuator design features the same dimensional envelope regardless of operation mode.

Type: Series 47 Advantage Actuator

Size Range: 3–4" (DN80–DN100)

Operating Modes:

Fail Close*, Fail Open, Double Acting

Max Service Pressure/Temperature:

150 psig (10.34 bar)

300°F (149°C)

External Temperature Limitations:

150°F (66°C)

Actuator Cover Material:

Vinyl-Ester Thermoset (FDA compliant)

Bonnet Material:

Nylon coated ductile iron

Corrosion Resistance:

Resists alcohol, chloride and most caustic washdowns.

For specific chemical resistance, consult factory.

Standard Features:

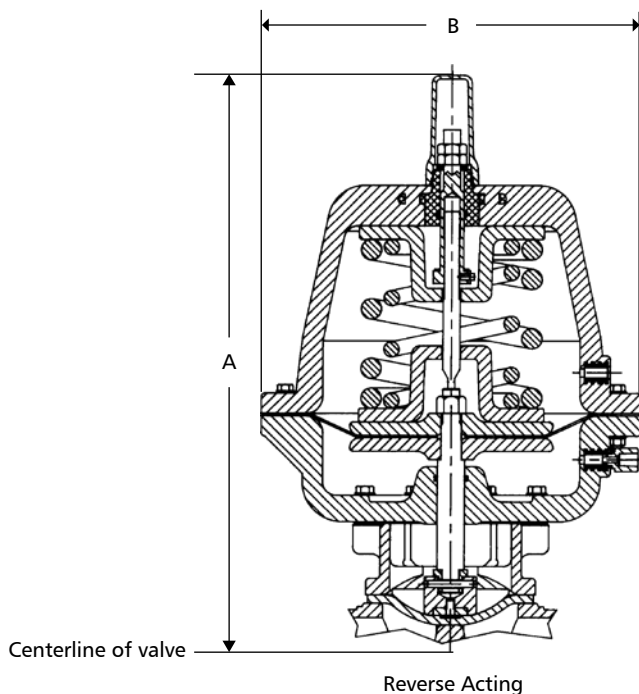
- Visual position indicator
- O-ring seals
- Adjustable Opening Stop (AOS)
- Adjustable Travel Stop (ATS)
- Switch mounting bolt pattern

Optional Features:

- Hygienic internals
- Solenoids available

*Springs self-contained (Fail close only)

Note: See page G3-G-5 for actuator sizing.



Dimensions & Actuator Weights (includes body)

Valve Size		A		B		Actuator Weights (includes body)					
						Double Acting		Fail Open		Fail Close	
Inch	DN	Inch	mm	Inch	mm	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.
3.00	80	21.28	540,5	14.00	356	72.09	32,70	75.39	34,20	107.49	48,76
4.00	100	22.90	581,7	14.00	356	82.50	37,42	85.80	38,92	117.50	53,30

Advantage® 2.1, Series 33, Series 47 Actuator Sizing - Fail Close

P

Fail Close Actuators - Air-To-Open, Spring-To-Close (Reverse Acting)																		
	Actuator and Spring Package	Maximum Line Pressure (psig)																Air pressure required to open for full stroke at 0 psi line pressure
		Valve Size																
		100 % ΔP								0% ΔP								
		BT²	0.5"	0.75"	1"	1.5"	2"	3"	4"	BT²	0.5"	0.75"	1"	1.5"	2"	3"	4"	
Elastomer Diaphragm	A203/B203 60#	150								150								55
	A204/B204 90#	150								150								75
	A205/B205 60#		110								90							50
	A206/B206 90#		150								150							90
	A208/B208 60#			100								60						45
	A208/B208 60#				70								40					60
	A209/B209 90#			150	150							120	85					90
	A216/B216 60#					100								65				50
	A216/B216 60#						70								30			60
	A217/B217 90#					150	150							130	75			90
	A233 60#							95	70							60	35	62
	A234 90#							150	110							92	50	85
	A247 60#							150								92		57
	A247 60#								119								59	60
	A248 80#							150								150		76
	A248 80#								150								93	82
PTFE Diaphragm¹	A203/B203 60#	70								55								55
	A204/B204 90#	150								125								75
	A206/B206 90#		150								150							90
	A208/B208 60#		150	140							100	70						60
	A208/B208 60#				100								35					70
	A209/B209 90#			150	150							80	80					90
	A216/B216 60#					125								70				50
	A216/B216 60#						60								45			60
	A217/B217 90#					150	150							125	70			90
	A233 60#							50	30							20	15	62
	A234 90#							105	60							45	30	85
	A247 60#							133								68		61
	A247 60#								70								41	62
	A248 80#							150								114		82
	A248 80#								150								70	90

Fail Close Actuators - Air-To-Open, Spring-To-Close (Reverse Acting)																		
	Actuator and Spring Package	Maximum Line Pressure (bar)																Air pressure required to open for full stroke at 0 bar line pressure
		Valve Size																
		100 % ΔP								0% ΔP								
		BT²	DN15	DN20	DN25	DN40	DN50	DN80	DN100	BT²	DN15	DN20	DN25	DN40	DN50	DN80	DN100	
Elastomer Diaphragm	A203/B203 60#	10,34								10,34								3,79
	A204/B204 90#	10,34								10,34								5,17
	A205/B205 60#		7,58								6,21							3,45
	A206/B206 90#		10,34								10,34							6,21
	A208/B208 60#			6,89								4,14						3,10
	A208/B208 60#				4,83								2,75					4,14
	A209/B209 90#			10,34	10,34							8,27	5,86					6,21
	A216/B216 60#					6,89								4,48				3,45
	A216/B216 60#						4,83								2,07			4,14
	A217/B217 90#					10,34	10,34							8,96	5,17			6,21
	A233 60#							6,55	4,83							4,14	2,41	4,28
	A234 90#							10,34	7,59							6,34	3,45	5,86
	A247 60#							10,34								6,34		3,93
	A247 60#								8,20								4,07	4,14
	A248 80#							10,34								10,34		5,24
	A248 80#								10,34								6,41	5,65
PTFE Diaphragm¹	A203/B203 60#	4,83								3,79								3,79
	A204/B204 90#	10,34								8,62								5,17
	A206/B206 90#		10,34								10,34							6,21
	A208/B208 60#		10,34	9,65							6,89	4,83						4,14
	A208/B208 60#				6,89								2,41					4,83
	A209/B209 90#			10,34	10,34							5,52	5,52					6,21
	A216/B216 60#					8,62								4,83				3,45
	A216/B216 60#						4,14								3,10			4,14
	A217/B217 90#					10,34	10,34							8,82	4,83			6,21
	A233 60#							3,45	2,07							1,38	1,03	4,28
	A234 90#							7,24	4,14							3,10	2,07	5,86
	A247 60#							9,17	4,83							4,69		4,21
	A247 60#																2,83	4,27
	A248 80#							10,34								7,86		5,65
	A248 80#									10,34							4,83	6,21

¹ The exposure of the diaphragm to steam may increase the air requirements to close by as much as 30%.

² Bio-Tek includes size 0.25" (DN8), 0.375" (DN10), and 0.5" (DN15).

Note: Values are also valid for the Advantage 2.0

Advantage® 2.1, Series 33, Series 47 Actuator Sizing - Fail Open

P

Fail Open Actuators - Air-To-Close, Spring-To-Open (Direct Acting)																					
	Air Pressure Required to Close (psig)																				
	Size	Bio-Tek ²		0.5"		0.75"		1"		1.5"		2"		3"		4"		3"		4"	
	Actuator	A103/B103		A105/B105		A108/B108		A108/B108		A116/B116		A116/B116		A133		A133		A147		A147	
	Line Pressure	% ΔP																			
Elastomer Diaphragm		100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0
	20	38	40	38	45	38	55	49	50	36	40	40	45	44	46	48	55	32	37	30	40
	40	40	42	40	50	42	60	52	61	38	44	45	50	50	58	55	69	41	44	36	47
	60	42	44	44	55	46	65	57	71	42	48	50	60	55	66	64	85	42	49	42	56
	80	46	48	48	60	50	70	61	80	44	52	56	70	61	76	72	90	44	56	48	66
	100	48	52	50	65	52	75	67	90	48	56	60	75	66	90	80	-	52	65	53	79
	125	52	56	54	70	60	85	73	-	50	60	64	80	78	-	90	-	63	73	59	90
PTFE Diaphragm ¹	150	56	60	58	75	68	-	81	-	52	65	68	-	81	-	-	-	71	83	65	-
	20	42	50	46	66	55	55	50	55	45	52	48	50	64	60	78	80	36	53	46	48
	40	44	52	50	68	58	60	55	60	50	56	50	60	68	78	84	90	44	60	52	66
	60	48	56	52	72	60	65	60	65	55	60	56	70	74	88	90	-	51	75	56	74
	80	52	60	56	76	65	70	65	70	60	64	64	80	78	-	-	-	55	85	62	81
	100	54	65	60	82	68	75	70	80	64	68	70	90	84	-	-	-	57	-	70	90
	125	58	70	64	86	74	80	75	-	68	72	76	-	90	-	-	-	59	-	79	-
150	62	75	68	-	80	85	80	-	72	76	82	-	-	-	-	-	63	-	83	-	

Fail Open Actuators - Air-To-Close, Spring-To-Open (Direct Acting)																						
	Air Pressure Required to Close (bar)																					
	Size	Bio-Tek ²		DN15		DN20		DN25		DN40		DN50		DN80		DN100		DN80		DN100		
	Actuator	A103/B103		A105/B105		A108/B108		A108/B108		A116/B116		A116/B116		A133		A133		A147		A147		
	Line	% ΔP																				
	Pressure	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	
Elastomer Diaphragm	1,38	2,62	2,76	2,62	3,10	2,62	3,79	3,31	3,44	2,48	2,76	2,76	3,10	3,03	3,17	3,31	3,79	2,21	2,55	2,07	2,76	
	2,76	2,76	2,90	2,21	3,45	2,70	4,14	3,58	4,20	2,62	3,03	3,10	3,45	3,45	4,00	3,79	4,76	2,83	3,03	2,48	3,24	
	4,14	2,90	3,03	3,03	3,79	3,17	4,48	3,93	4,90	2,90	3,31	3,45	4,14	3,79	4,55	4,41	5,86	2,90	3,38	2,90	3,86	
	5,52	3,17	3,31	3,31	4,14	3,45	4,83	4,20	5,57	3,03	3,56	3,86	4,83	4,21	5,24	4,97	6,21	3,03	3,86	3,31	4,55	
	6,89	3,31	3,59	3,45	4,48	3,59	5,17	4,62	6,21	3,31	3,86	4,14	5,17	4,55	6,21	5,52	-	3,59	4,48	3,65	5,45	
	8,62	3,59	3,86	3,72	4,83	4,14	5,86	5,03	-	3,45	4,13	4,41	5,52	5,38	-	6,21	-	4,34	5,03	4,07	6,21	
	10,34	3,86	4,14	4,00	5,17	4,70	-	5,59	-	3,59	4,48	4,69	-	5,59	-	-	-	4,90	5,72	4,48	-	
PTFE Diaphragm ¹	1,38	2,90	3,45	3,17	4,55	3,79	3,79	3,45	3,79	3,10	3,59	3,31	3,45	4,41	4,14	5,38	5,52	2,48	3,65	3,17	3,31	
	2,76	3,03	3,59	3,45	4,70	4,00	4,14	3,79	4,14	3,45	3,86	3,45	4,14	4,69	5,38	5,79	6,21	3,03	4,14	3,59	4,55	
	4,14	3,31	3,86	3,59	4,97	4,14	4,48	4,14	4,48	3,79	4,14	3,86	4,83	5,10	6,07	6,21	-	3,52	5,17	3,86	5,10	
	5,52	3,59	4,14	3,86	5,24	4,48	4,83	4,48	4,83	4,14	4,41	4,41	5,52	5,38	-	-	-	3,79	5,86	4,27	5,58	
	6,89	3,72	4,48	4,14	5,65	4,69	5,17	4,83	5,52	4,41	4,69	4,83	6,21	5,79	-	-	-	3,93	-	4,83	6,21	
	8,62	4,00	4,83	4,41	5,93	5,10	5,52	5,17	-	4,69	4,97	5,24	-	6,21	-	-	-	4,07	-	5,45	-	
	10,34	4,27	5,17	4,70	-	5,52	5,86	5,52	-	4,96	5,24	5,65	-	-	-	-	-	4,34	-	5,72	-	

¹ The exposure of the diaphragm to steam may increase the air requirements to close by as much as 30%.

² Bio-Tek includes size 0.25" (DN8), 0.375" (DN10), and 0.5" (DN15).

Note: Values are also valid for the Advantage 2.0

Advantage® 2.1, Series 33, Series 47 Actuator Sizing - Double Acting

P

Double Acting Actuators - Air-To-Close, Air-To-Open																					
	Air Pressure Required to Close (psig)																				
	Size	Bio-Tek ²		0.5"		0.75"		1"		1.5"		2"		3"		4"		3"		4"	
	Actuator	A303/B303		A305/B305		A308/B308		A308/B308		A316/B316		A316/B316		A333		A333		A347		A147	
	Line	% ΔP																			
	Pressure	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0
Elastomer Diaphragm	20	22	26	24	30	18	25	31	32	16	20	22	40	18	24	16	25	11	14	9	25
	40	24	28	26	35	20	30	34	43	20	25	26	45	26	29	24	38	17	21	15	30
	60	26	30	28	40	24	35	39	53	24	30	30	50	32	38	30	55	22	28	22	46
	80	28	32	32	45	26	40	44	62	28	35	35	55	38	48	38	68	23	35	27	60
	100	30	34	34	50	30	50	50	72	32	40	40	60	42	58	48	84	26	43	32	68
	125	32	38	38	55	34	55	55	89	36	45	45	70	52	68	58	-	34	53	40	76
PTFE Diaphragm ¹	150	34	44	42	60	38	60	63	-	40	50	50	80	57	80	68	-	37	61	49	88
	20	34	36	34	36	28	30	25	35	25	34	35	40	38	38	42	44	19	33	31	37
	40	36	40	36	40	34	35	35	40	30	38	40	50	41	49	50	60	21	40	35	53
	60	40	44	40	46	38	40	45	50	35	42	50	60	47	58	56	74	29	46	44	59
	80	42	46	42	50	40	45	50	55	40	46	55	70	53	67	65	90	32	51	49	65
	100	44	52	44	54	42	50	55	60	45	50	60	80	58	78	73	-	35	58	54	77
	125	46	56	46	58	44	55	60	70	50	55	64	90	64	90	82	-	42	68	62	-
	150	48	62	48	62	46	60	65	80	55	62	68	-	69	-	90	-	45	78	68	-

Double Acting Actuators - Air-To-Close, Air-To-Open																					
	Air Pressure Required to Close (bar)																				
	Size	Bio-Tek ²		DN15		DN20		DN25		DN40		DN50		DN80		DN100		DN80		DN100	
	Actuator	A303/B303		A305/B305		A308/B308		A308/B308		A316/B316		A316/B316		A333		A333		A347		A147	
	Line	% ΔP																			
	Pressure	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0
Elastomer Diaphragm	1,38	1,51	1,79	1,65	2,07	1,24	1,72	2,14	2,21	1,10	1,38	1,52	2,76	1,24	1,66	1,10	1,72	0,76	0,79	0,62	1,72
	2,76	1,65	1,93	1,79	2,41	1,38	2,07	2,34	2,97	1,38	1,72	1,79	3,10	1,79	2,00	1,66	2,62	1,17	1,45	1,03	2,07
	4,14	1,79	2,07	1,93	2,75	1,65	2,41	2,69	3,66	1,65	2,07	2,07	3,45	2,21	2,62	2,07	3,79	1,52	1,93	1,52	3,17
	5,52	1,93	2,21	2,21	3,10	1,79	2,76	3,03	4,27	1,93	2,41	2,41	3,79	2,62	3,31	2,62	4,69	1,59	2,41	1,86	4,14
	6,89	2,07	2,34	2,34	3,45	2,07	3,45	3,45	4,96	2,21	2,76	2,76	4,14	2,90	4,00	3,31	5,79	1,79	2,96	2,21	4,69
	8,62	2,21	2,62	2,62	3,79	2,34	3,79	3,79	6,14	2,48	3,10	3,10	4,83	3,59	4,69	4,00	-	2,34	3,65	2,76	5,24
PTFE Diaphragm ¹	10,34	2,34	3,03	2,90	4,14	2,62	4,14	4,34	-	2,76	3,45	3,45	5,52	3,93	5,52	4,69	-	2,55	4,21	3,38	6,07
	1,38	2,34	2,48	2,34	2,48	1,93	2,07	1,72	2,41	1,72	2,34	2,41	2,76	2,62	2,62	2,90	3,03	1,31	2,28	2,14	2,55
	2,76	2,45	2,76	2,76	2,48	2,34	2,41	2,41	2,76	2,07	2,62	2,76	3,45	2,83	3,38	3,45	4,14	1,45	2,76	2,41	3,66
	4,14	2,76	3,03	2,76	3,17	2,62	2,76	3,10	3,45	2,41	2,90	3,45	4,14	3,24	4,00	3,86	5,10	2,00	3,17	3,03	4,07
	5,52	2,90	3,17	2,90	3,45	2,76	3,10	3,45	3,79	2,76	3,17	3,79	4,83	3,66	4,62	4,48	6,21	2,21	3,52	3,38	4,48
	6,89	3,03	3,57	3,03	3,72	2,90	3,45	3,79	4,14	3,10	3,45	4,14	5,52	4,00	5,38	5,03	-	2,41	4,00	3,72	5,31
	8,62	3,17	3,86	3,17	4,00	3,03	3,79	4,14	4,83	3,45	3,79	4,41	6,21	4,41	6,21	5,66	-	2,90	4,69	4,28	-
	10,34	3,31	4,27	3,31	4,28	3,17	4,14	4,48	5,52	3,79	4,28	4,69	-	4,76	-	6,21	-	3,10	5,38	4,69	-

¹ The exposure of the diaphragm to steam may increase the air requirements to close by as much as 30%.

² Bio-Tek includes size 0.25" (DN8), 0.375" (DN10), and 0.5" (DN15).

Note: Values are also valid for the Advantage 2.0



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