

Diaphragm actuator

ARCA
VALVES

Diaphragm actuator for control and regulating services

Universal diaphragm actuator for individual control and regulating functions

Also in the electronic age many industrial sectors can not renounce the application of diaphragm actuators in connection with pneumatic or electro-pneumatic positioners as standard actuators.

Short floating speed and high control forces are criterions resulting in extreme efficiency, reliability and especially long duty lifes.

ARCA diaphragm actuators have proven themselves in the industry for more than 50 years. Everywhere, where robust design, functional safety and a specially favourable ratio of costs and performance are required.

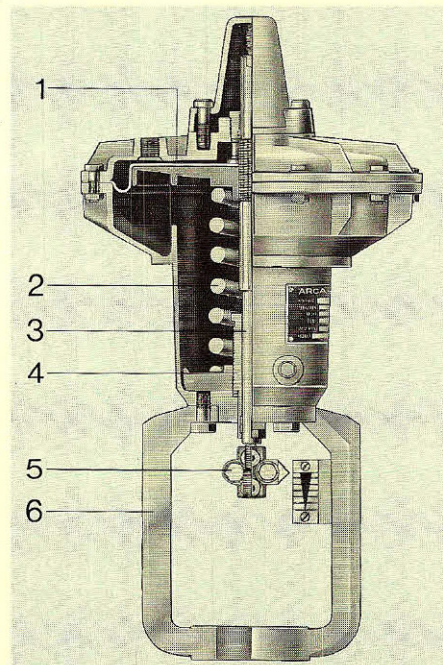
The function:

Air power moves the spindle via the diaphragm against the spring power. In case of decreasing air pressure the spring acts in opposite direction. The initial spring tension can be adapted to the process data by means of the spring tensioning screw. The support is connecting the actuator with the control valve. At the same time the stroke indicator is the connection to the valve spindle.

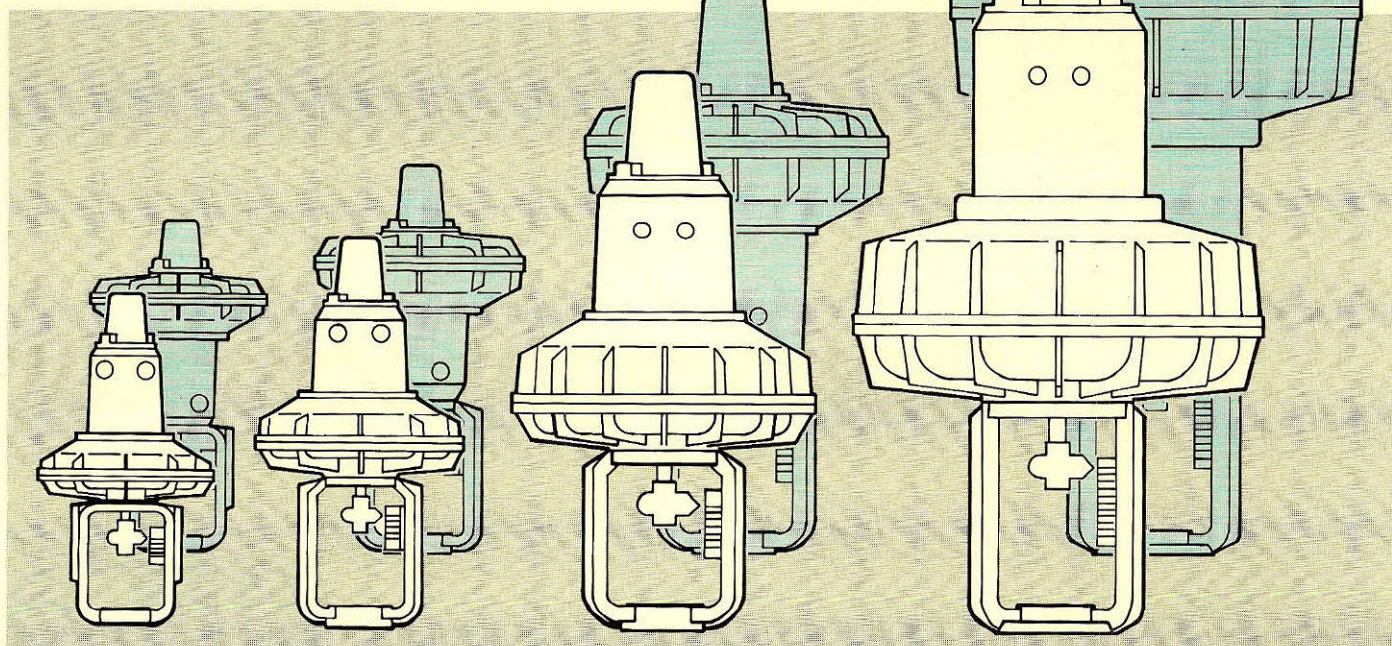
The proven ARCA modular system enables you to combine all valve types with the UMA-types.

Important advantages:

- 1. universal**
Same type applicable for control and regulating functions.
- 2. reversible**
For reversing the control action only loosen four screws, turn the actuator at 180° and tighten the screws again. Possible planning errors can still be corrected on the spot without any problems.
- 3. enormous forces**
The strong springs in a solid casing made of high-quality aluminium alloy are providing these actuators with control forces of up to 4 t.
- 4. long duty life**
All parts are designed for approx. 1 million strokes. A special diaphragm allows max. 6 bar operating pressure.
- 5. mounting facilities**
at the support (NAMUR) provided for positioner, limit switches, stroke limitations or field controller. Several instruments can be mounted directly.
- 6. low-priced hand adjustment**
For emergency operation of your valves hand adjustment devices can be subsequently mounted, too.
- 7. few spare parts, little maintenance**
The restriction to 4 sizes only enables the disposition of only a few spare parts for emergency cases.



- 1 Diaphragm
- 2 Spring
- 3 Spindle
- 4 Spring tensioning screw
- 5 Stroke indicator
- 6 Support



U0 (210 cm²)

UI (320 cm²)

U III (720 cm²)

UV (1440 cm²)

Size	Diaph.-surf. [cm ²]	Order-No.	Weight (kg)		Stroke	Ø D	M inside	Ø d	S	B	A	H	Hv	Ø R	T inside
			hand adjustment with	without											
U 0	210	811.11	6,6	8,2	10/20	230	M 10	40	15	117	77	430	110	180	G 1/4
		811.13	7,0	8,6											
		811.12	7,0	8,6											
		811.14	7,4	9,0											
U I	320	811.21	13,5	16,3	10/20	270	M 10	48	20	127	82	495	135	225	
		811.23	14,1	16,9											
		811.22	14,2	17,0											
		811.24	14,6	17,4											
U III	720	811.31	33,0	42,3	20/30	392	M 14	56	25	151	155	722	197	320	
		811.34	36,2	45,5											
		811.32	33,2	42,5											
		811.33	35,0	44,3											
		811.35	37,2	46,5											
		811.36	39,3	48,6											
U V	1440	811.41	79,0	99,0	30	530	M 20 x 1,5	72	30	194	147	1006	295	400	G 1/2
		811.44	85,0	105,0											
		811.42	79,5	99,5											
		811.43	78,0	98,0											
		811.45	86,0	106,0											
		811.46	87,0	107,0											

Control signal: 6 bar max.

Materials:

All body parts and diaphragm plates made of seawater-proof aluminium alloy. Spring tensioning screw, spindle bushing and spindle made of stainless chromium steel. Support made of GG-25 (U 0 and U I) or GGG-40 (U III and U V). Free of nonferrous metal. On request, body parts with sintered polyamid plastic coating.

Service diaphragm:

Perbunan mixture with tissue reinforcement for air, oil or water from -40 up to +90°C.

Spindle bushing:

Straight-through spindle with rolled surface, top- and bottom-guided in teflon slot ring bearings. Pressure chamber with O-ring sealing.

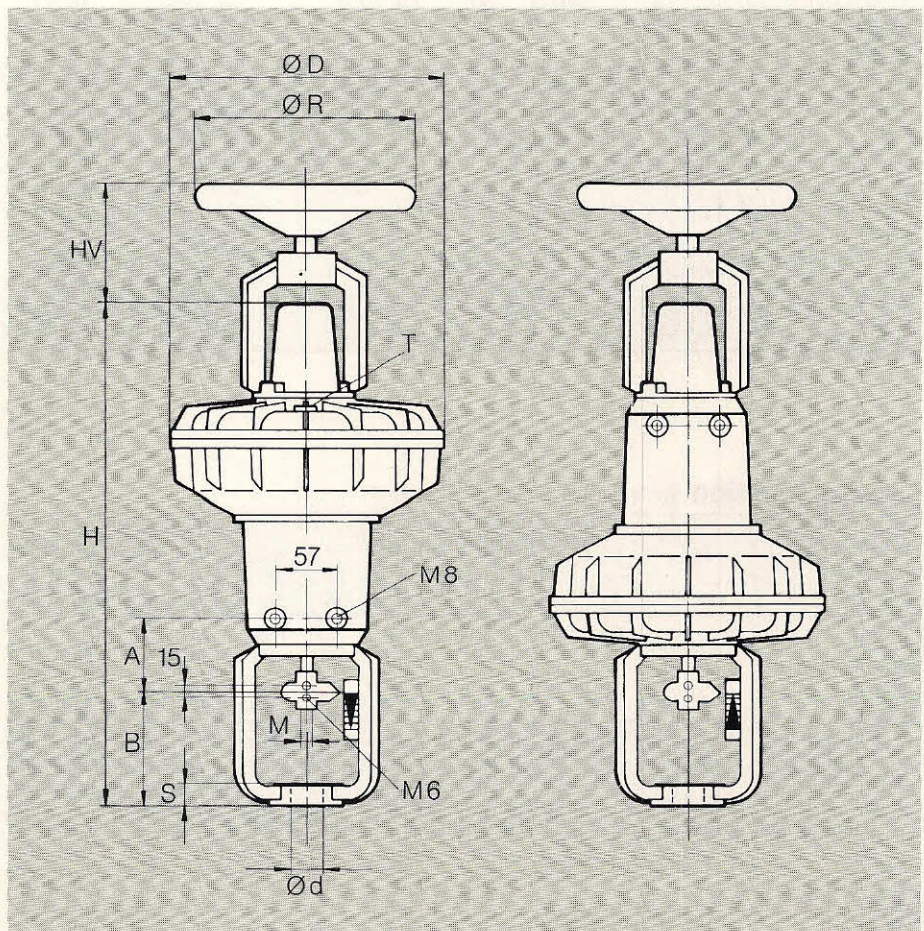
Standard spring:

Control range = 0,8 bar; for control actions: air to open or air to close.

Strong spring:

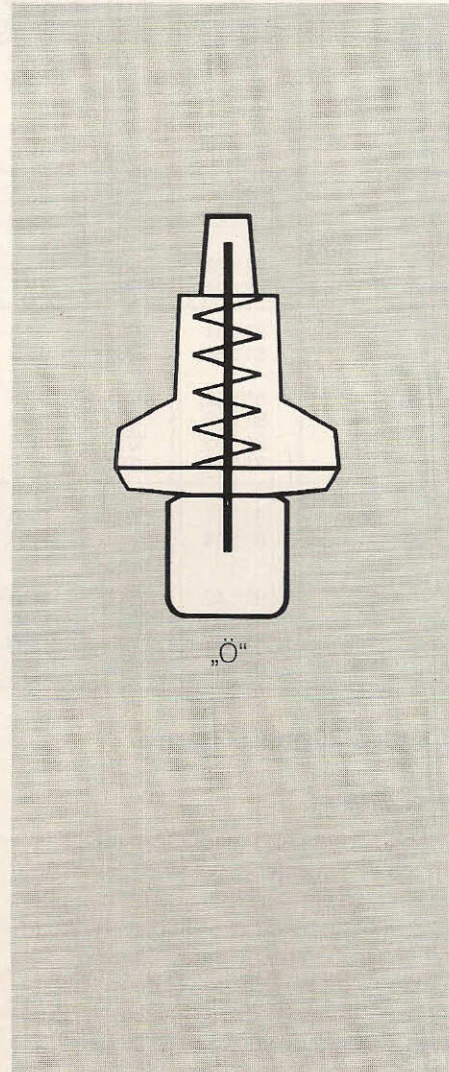
Control range > 0,8 bar; for max. spring forces with control action: air to open.

Subject to technical modifications.



Opening function (air to open – spring to close)

Size	Diaphragm-surface [cm ²]	Order No.	Spring-No.	Stroke [mm]	Control range adjustable		Control force [kN]	
					from [bar]	to		
U0	210	811.11	54610	10	0,4 –0,8	1,4 –1,8	2,8	
				20	0,0 –0,8	1,0 –1,8	2,1	
		811.12		10	0,4 –0,8	1,4 –1,8	2,8	
				20	0,0 –0,8	1,0 –1,8	2,1	
		811.13		54611	10	1,0 –1,8	2,2 –3,0	4,5
					20	0,2 –1,8	1,4 –3,0	2,8
		811.14		10	1,0 –1,8	2,2 –3,0	4,5	
				20	0,2 –1,8	1,4 –3,0	2,8	
UI	320	811.21	54620	10	0,55–0,95	1,4 –1,8	4,4	
				20	0,15–0,95	1,0 –1,8	3,1	
		811.22		54621	20	0,46–1,0	1,26–1,8	4,0
					30	0,2 –1,0	1,0 –1,8	3,1
		811.23		54622	10	1,28–1,8	2,48–3,0	7,7
					20	0,75–1,8	1,95–3,0	5,7
		811.24		20	0,75–1,8	1,95–3,0	5,7	
				30	0,4 –2,0	1,4 –3,0	4,4	
U III	720	811.31	54630	20	0,46–1,0	1,46–2,0	10,3	
				30	0,2 –1,0	1,2 –2,0	8,4	
		811.32		54631	30	0,46–1,0	1,26–1,8	8,8
					45	0,2 –1,0	1,0 –1,8	7,0
		811.33		54632	60	0,2 –1,0	0,8 –1,6	5,7
					20	1,36–1,9	2,46–3,0	17,3
		811.34		54633	30	1,4 –2,2	2,2 –3,0	15,5
					45	1,4 –2,2	2,2 –3,0	15,5
811.35	45	1,0 –2,2	1,8 –3,0	12,7				
	60	0,7 –2,3	1,4 –3,0	9,8				
UV	1440	811.41	54650	30	0,5 –0,9	1,4 –1,8	19,7	
				45	0,3 –0,9	1,2 –1,8	16,9	
				60	0,1 –0,9	1,0 –1,8	14,1	
		811.42		54651	60	0,3 –0,9	1,0 –1,6	14,1
					75	0,1 –0,9	0,8 –1,6	11,3
		811.43		54652	100	0,1 –0,9	0,6 –1,4	8,4
					30	1,0 –1,65	2,35–3,0	33,1
		811.44		54658	45	0,7 –1,65	2,05–3,0	28,9
					60	0,4 –1,65	1,75–3,0	24,7
		811.45		75	0,4 –2,0	1,4 –3,0	19,7	
811.46	100	0,4 –2,4	1,0 –3,0	14,1				



Closing function (air to close – spring to open)

Size	Diaphragm-surface [cm ²]	Order No.	Spring-No.	Stroke [mm]	Control-range [bar]	Control force kN depending on control pressure						
						1,4 bar	2,0 bar	2,5 bar	3,0 bar	4,5 bar	6,0 bar	
U0	210	811.11	54610	10	0,4	2,0	3,2	4,3	5,3	8,5	11,6	
				20	0,8	1,1	2,4	3,4	4,5	7,6	10,8	
				811.12	10	0,4	2,0	3,2	4,3	5,3	8,5	11,6
					20	0,8	1,1	2,4	3,4	4,5	7,6	10,8
UI	320	811.21	54620	10	0,4	3,1	5,0	6,6	8,2	13,2	17,8	
				20	0,8	1,9	3,8	5,4	7,0	11,8	16,6	
		811.22		54621	20	0,53	2,1	4,0	5,6	7,2	12,0	16,8
					30	0,8	1,3	3,2	4,8	6,4	11,2	16,0
U III	720	811.31	54630	20	0,53	6,3	10,6	14,2	17,8	28,6	39,4	
				30	0,8	3,7	8,0	11,6	15,2	26,0	36,0	
		811.32		54631	30	0,53	6,4	10,7	14,3	17,9	28,7	39,5
					45	0,8	4,6	8,9	12,5	16,1	26,9	37,7
811.33	54632	60	0,8	3,8	8,1	11,7	15,3	26,1	36,9			
UV	1440	811.41	54650	30	0,4	14,9	23,6	30,8	38,0	59,6	81,2	
				45	0,6	12,3	21,0	28,2	35,4	57,1	78,6	
				60	0,8	9,7	18,4	25,6	32,8	54,4	76,2	
		811.42		54651	60	0,6	11,8	20,4	27,6	34,8	56,4	78,0
					75	0,8	9,7	18,3	25,5	32,7	54,3	75,9

