

### LINEAR PNEUMATIC ACTUATORS PA (100 cm<sup>2</sup> to 2400 cm<sup>2</sup>)

#### DESCRIPTION

PA series pneumatic multi-spring actuators with rolling diaphragm, offering decreased hysteresis and good linearity throughout the operating range. Available in air to close and air to open versions, for modulating and on/off services.

#### MAIN FEATURES

Multi-spring compact design.  
 Actuators with rolling diaphragm.  
 High spring thrusts and stroking speeds.  
 Strokes up to 60 mm.  
 Sizes from 100 cm<sup>2</sup> to 2400 cm<sup>2</sup>.  
 Yoke and stem coupling with mounting according to NAMUR (DIN IEC 60534-6-1).  
 Operation temperature range from -20 °C to 80 °C.

#### OPTIONS AND

ACCESSORIES: Top mounted handwheel.  
 Stroke limiter.  
 Stainless steel construction.  
 Positioners, limit switches, I/P converters,  
 volume boosters, feedback units and others.

USE: Actuation of ADCATrol control valves, or others  
 on request.

#### AVAILABLE

MODELS: PA10, PA206, PA281, PA341, PA436, PA80,  
 PA80D and PA80T – mild steel.  
 PA10i, PA206i, PA281i, PA341i and PA436i –  
 stainless steel.

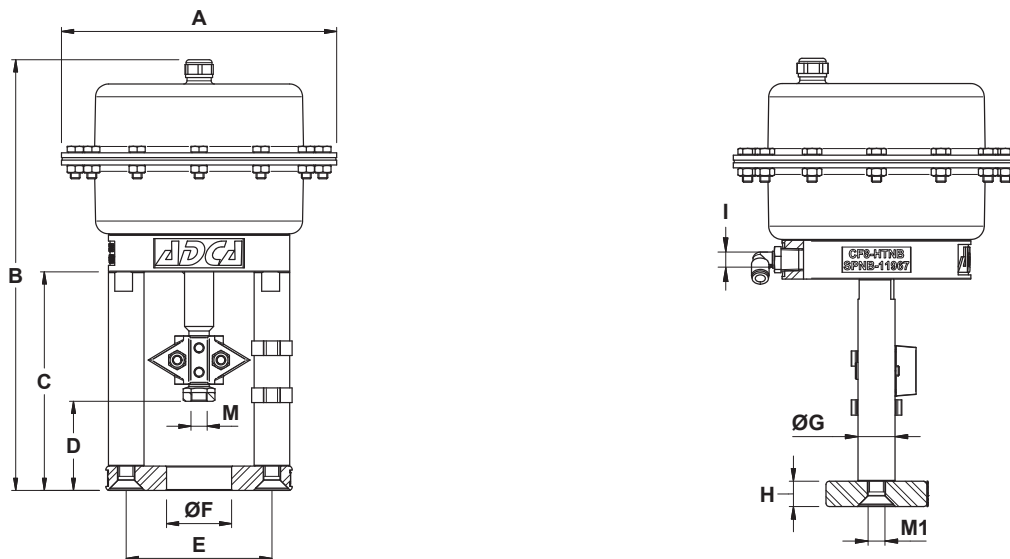


**SPRING RANGES AND ACTUATOR THRUSTS**

ACTUATOR MODEL	DIAPHRAGM AREA (cm <sup>2</sup> )	RATED STROKE (mm)	SPRING RANGE (bar)	SPRING QTY.	SPRING FORCE AT 0 mm TRAVEL (N)	SPRING FORCE AT RATED TRAVEL (N)	ACTUATOR FORCE (N) IN RELATION TO MOTIVE AIR PRESSURE (bar)						MAX. AIR SUPPLY (bar)	
							1,4	2	3	3,5	4	5		6
PA10	100	20	0,2 - 1 a)	1	200	1000	400	1000	2000	2500	3000	4000	5000	6
			1 - 2	1	1000	2000	-	-	1000	1500	2000	3000	4000	
			2 - 4	1	2000	4000	-	-	-	-	-	1000	2000	
PA206	140	20	0,2 - 1	1	280	1000	560	1400	2800	3500	-	-	-	3,5
			1 - 3 b)	2	1400	4200	-	-	-	700	-	-	-	
PA281	300	20	0,2 - 1 a)	4	600	3000	1200	3000	6000	7500	-	-	-	3,5
			0,4 - 2 a)	8	1200	6000	-	-	3000	4500	-	-	-	
			0,8 - 1,6	4	2400	4200	-	1200	4200	5700	-	-	-	
			1,2 - 2,4	6	3600	7200	-	-	1800	3300	-	-	-	
PA341	445	30	0,2 - 1 a)	4	890	4450	1780	4450	8900	11125	-	-	-	3,5
			0,4 - 2 a)	8	1780	8900	-	-	4450	6675	-	-	-	
			0,6 - 1,4	4	2670	6230	-	2670	7120	9345	-	-	-	
			0,9 - 2,1	6	4005	9345	-	-	4005	6230	-	-	-	
PA436	700	30	0,2 - 1 a)	4	1400	7000	2800	7000	14000	17500	-	-	-	3,5
			0,4 - 2 a)	8	2800	14000	-	-	7000	10500	-	-	-	
			1 - 2	4	7000	14000	-	-	7000	10500	-	-	-	
			1,5 - 3	6	10500	21000	-	-	-	3500	-	-	-	
PA80	800	30 60	0,2 - 1 a)	4	1600	8000	3200	8000	16000	20000	24000	32000	40000	6
			0,4 - 2 a)	8	3200	16000	-	-	8000	12000	16000	24000	32000	
			1 - 2	4	8000	16000	-	-	8000	12000	16000	24000	32000	
			1,5 - 3	6	12000	24000	-	-	-	4000	8000	16000	24000	
			2 - 4	8	16000	32000	-	-	-	-	-	8000	16000	
PA80D	1600	60	0,2 - 1 a)	8	3200	16000	6400	16000	32000	40000	48000	64000	80000	6
			0,4 - 2 a)	16	6400	32000	-	-	16000	24000	32000	48000	64000	
			1 - 2	8	16000	32000	-	-	16000	24000	32000	48000	64000	
			1,5 - 3	12	24000	48000	-	-	-	8000	16000	32000	48000	
			2 - 4	16	32000	64000	-	-	-	-	-	16000	32000	
PA80T b)	2400	60	0,2 - 1 a)	12	4800	24000	9600	24000	48000	60000	72000	96000	120000	6
			0,4 - 2 a)	24	9600	48000	-	-	24000	36000	48000	72000	96000	
			1 - 2	12	24000	48000	-	-	24000	36000	48000	72000	96000	
			1,5 - 3	18	36000	72000	-	-	-	12000	24000	48000	72000	
			2 - 4	24	48000	96000	-	-	-	-	-	24000	48000	

a) Actuator with 25% additional possible spring compression, allowing setting of 0,4 - 1,2 bar (0,2 - 1 bar) and 0,8 - 2,4 (0,4 - 2 bar) operating ranges.

b) Not available in air to close, "stem retracts by spring force" version.

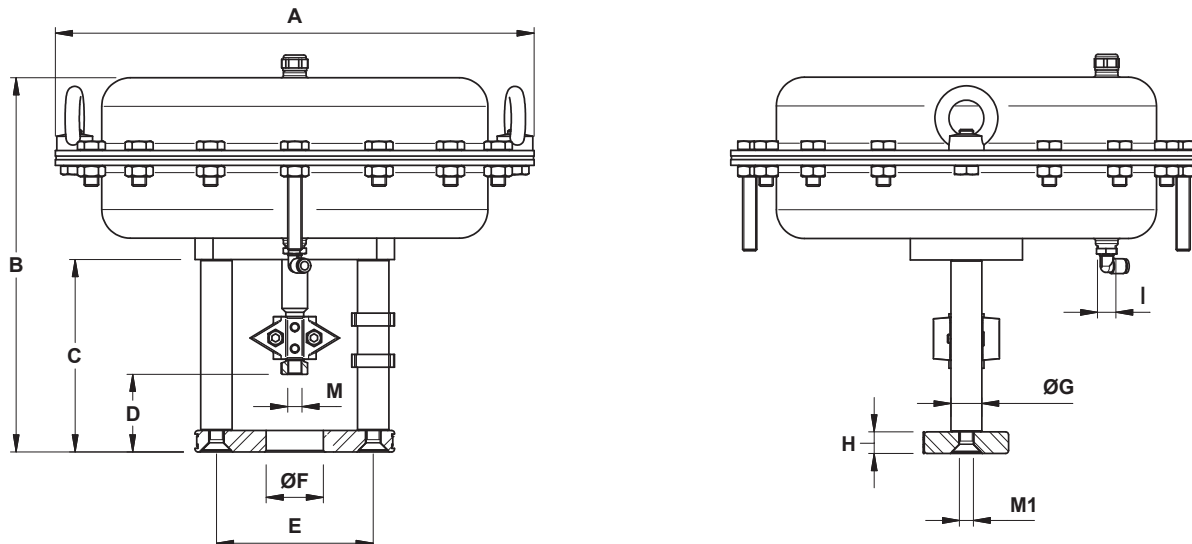


DIMENSIONS (mm)												
MODEL	Ø A	B	C	D	E	Ø F	Ø G	H	I	M *	M1	WEIGHT (kg)
PA10	170	251	135	55	90	40,5	22	15	G 1/4"	M10 x 1	M10	6,3

\* Depending on valve stem thread. Can be course or fine thread.

Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

Mild steel and stainless steel versions share the same dimensions.



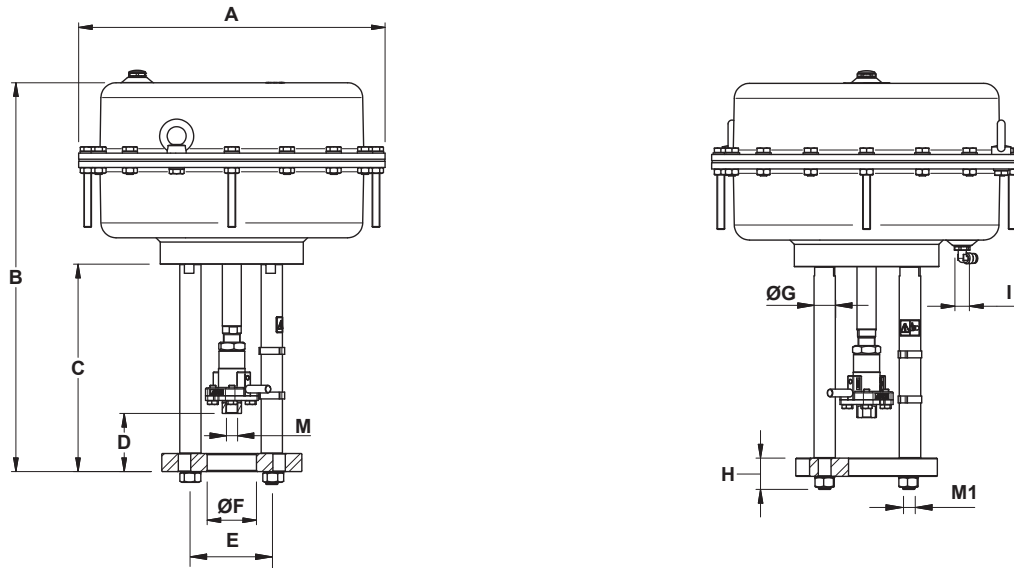
DIMENSIONS (mm)												
MODEL	A	B	C	D	E	F	G	H	I	M *	M1	WEIGHT (kg)
PA206	209	236	135	55	110	40	22	15	G 1/4"	M10 x 1	M10	6,2
PA281	275	243	135	55	110	40	22	15	G 1/4"	M10 x 1	M10	9,6
PA341	336	323	195	68	110	45	22	15	G 1/4"	M10 x 1 / M16 x 1,5	M10	15,9
PA436	430	351 / 371 **	195	68	110	45	22	15	G 1/4"	M10 x 1 / M16 x 1,5	M10	26,6 / 31 **

\* Depending on valve stem thread. Can be course or fine thread.

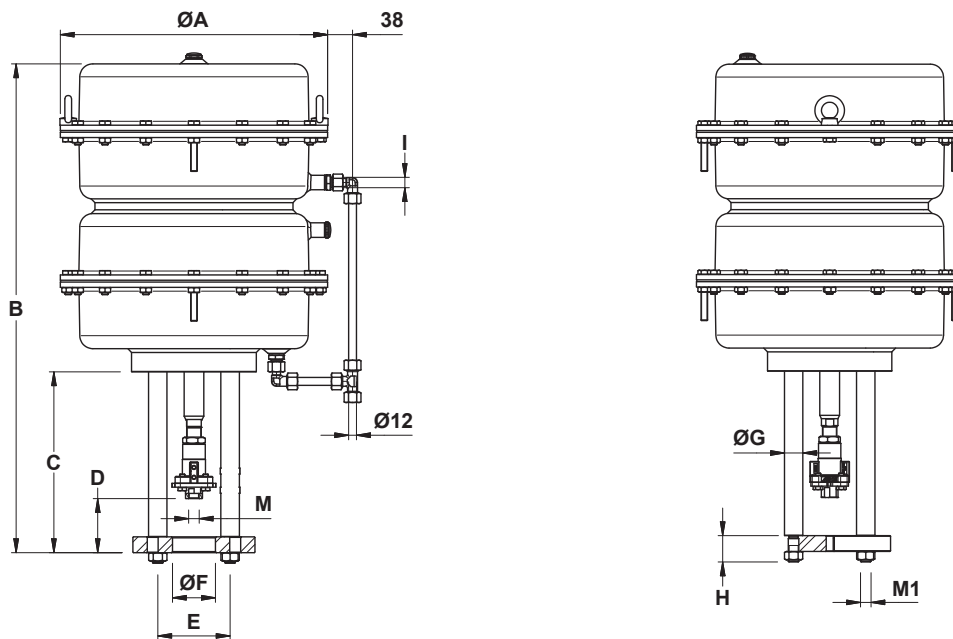
\*\* Actuators with spring ranges 1 - 2 bar, 1,5 - 3 bar and 2 - 4 bar.

Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

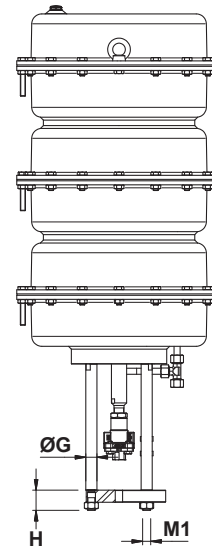
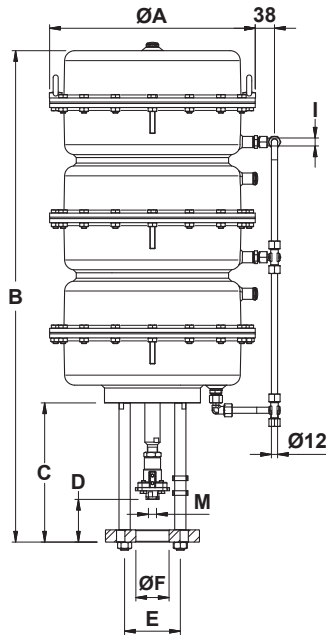
Mild steel and stainless steel versions share the same dimensions.



DIMENSIONS (mm)												
MODEL	Ø A	B	C	D	E	Ø F	Ø G	H	I	M	M1	WEIGHT (kg)
PA80 (DN 65 to 100)	405	505	265	70	110	45	22	30	G 3/8"	M16 x 1,5	M16	50,4
PA80 (DN 125 to 150)	405	515	274	87	Ø 155	65	28	40	G 3/8"	M16 x 1,5	M16	55,4
PA80 (DN 200)	405	545	304	113	Ø 155	80	28	40	G 3/8"	M27 x 1,5	M16	59,3

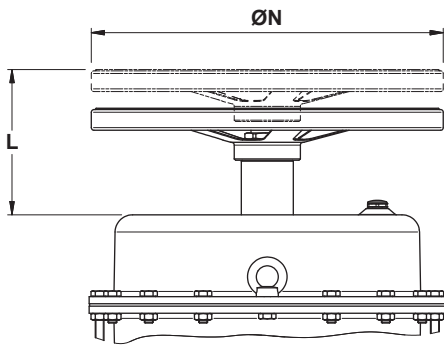


DIMENSIONS (mm)												
MODEL	Ø A	B	C	D	Ø E	Ø F	Ø G	H	I	M	M1	WEIGHT (kg)
PA80D (DN 125 to 150)	405	741	274	87	155	65	28	40	G 3/8"	M16 x 1,5	M16	107,7
PA80D (DN 200)	405	771	304	113	155	80	28	40	G 3/8"	M27 x 1,5	M16	111,6

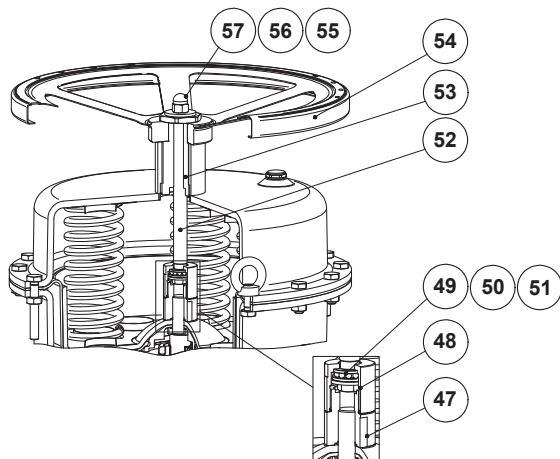


DIMENSIONS (mm)												
MODEL	Ø A	B	C	D	Ø E	Ø F	Ø G	H	I	M	M1	WEIGHT (kg)
PA80T (DN 125 to 150)	405	967	274	87	155	65	28	40	G 3/8"	M16 x 1,5	M16	162
PA80T (DN 200)	405	997	304	113	155	80	28	40	G 3/8"	M27 x 1,5	M16	166

**ACTUATOR WITH TOP MOUNTED HANDWHEEL**



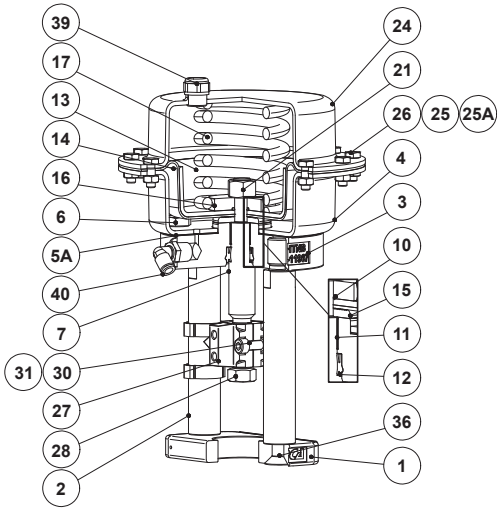
DIMENSIONS (mm)		
MODEL	Ø N	L
PA10 / PA206 / PA281	250	106
PA341	300	111
PA436 / PA80	400	156
PA80D / PA80T	Consult manufacturer	



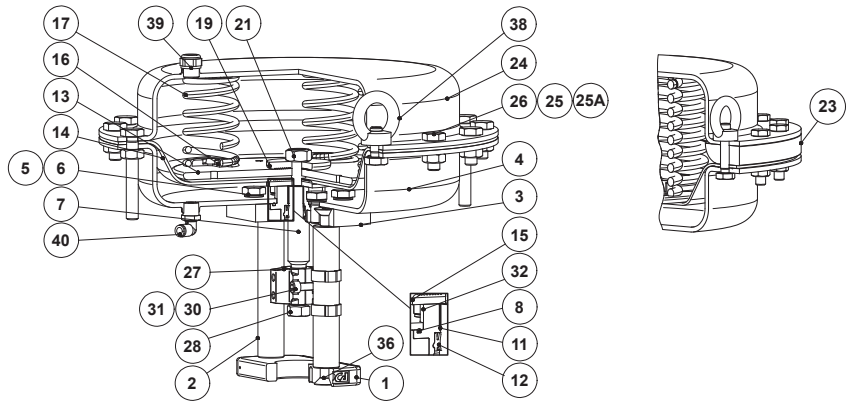
MATERIALS		
POS. N°	DESIGNATION	MATERIAL
47	Nut	AISI 316 / 1.4401
48	Nut	AISI 316 / 1.4401
49	Plain bearing	Steel / PTFE
50	Washer	Zinc plated steel
51	Bolt	AISI 304 / 1.4301
52	Stem	AISI 316 / 1.4401
53	Spindle	AISI 304 / 1.4301
54	Handwheel	Steel
55	Washer	Zinc plated steel
56	Locknut	C45E / 1.1191
57	Nut	AISI 304 / 1.4301

\* Available spare parts.

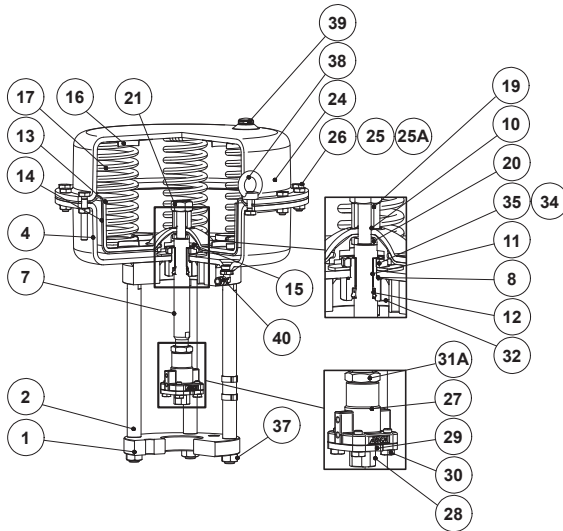
### MATERIALS



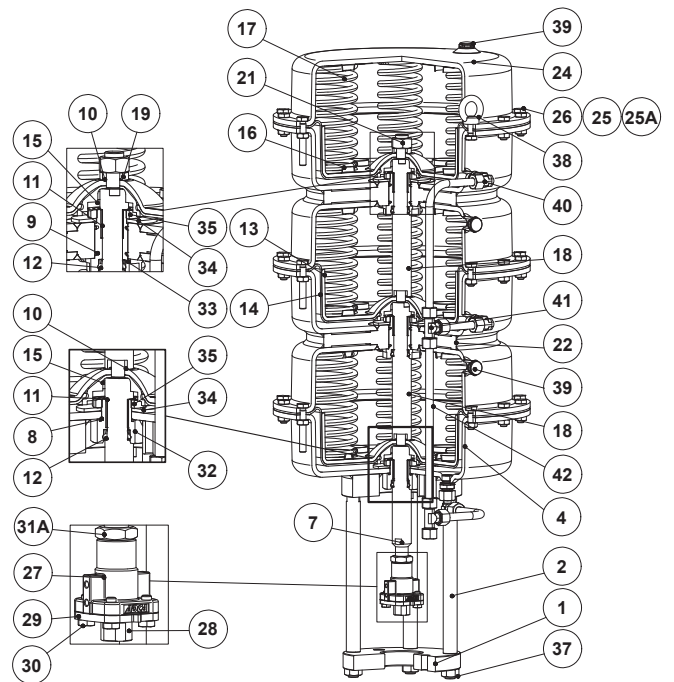
PA10



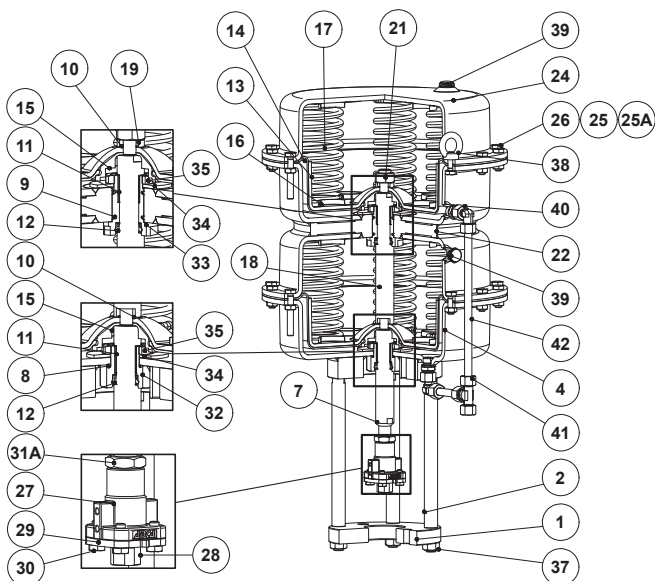
PA206 - PA436



PA80



PA80T



PA80D

MATERIALS					
POS. N°	DESIGNATION	PA10	PA10i	PA206, PA281, PA341 and PA436	PA206i, PA281i, PA341i and PA436i
1	Lower actuator flange	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308
2	Yoke columns	C45E / 1.1191	AISI 304 / 1.4301	C45E / 1.1191	AISI 304 / 1.4301
3	Upper actuator flange	A351 CF8 / 1.4308	A351 CF8 / 1.4308	C45E / 1.1191	A351 CF8 / 1.4308 AISI 304 / 1.4301
4	Lower actuator cover	DD13 / 1.0335	AISI 304 / 1.4301	DD12 / 1.0398	AISI 304 / 1.4301
5	Washers	–	–	Zinc plated steel	Zinc plated steel
5A	Gasket	NBR	NBR	–	–
6	Bolts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
7	Actuator stem	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401
8	* O-ring	–	–	NBR	NBR
10	* O-ring	NBR	NBR	–	–
11	* Plain bearing	Steel / PTFE	Steel / PTFE	Steel / PTFE	Steel / PTFE
12	* Seal ring	Polyurethane	Polyurethane	Polyurethane	Polyurethane
13	Diaphragm plate	DD13 / 1.0335	DD13 / 1.0335	S235JR / 1.0038	S235JR / 1.0038
14	* Diaphragm	Reinforced NBR	Reinforced NBR	Reinforced NBR	Reinforced NBR
15	Diaphragm disk	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191
16	Spring guide	AISI 304 / 1.4301	AISI 304 / 1.4301	C45E / 1.1191	C45E / 1.1191
17	* Springs	Spring steel	Spring steel	Spring steel	Spring steel
19	Spacer	–	–	C45E / 1.1191	C45E / 1.1191
21	Nut	Zinc plated steel	Zinc plated steel	Zinc plated steel	Zinc plated steel
23	Cover spacer	–	–	Aluminium	Aluminium
24	Upper actuator cover	DD13 / 1.0335	AISI 304 / 1.4301	DD12 / 1.0398	AISI 304 / 1.4301
25	Nuts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
25A	Washers	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
26	Bolts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
27	Coupling / Travel indicator	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308
28	Adaptor	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301
30	Bolts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
31	Nuts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
32	* Stem guide	–	–	AISI 304 / 1.4301	AISI 304 / 1.4301
36	Bolts	Zinc plated steel	Stainless steel A2-70	Zinc plated steel	Stainless steel A2-70
38	Eyebolts	–	–	Zinc plated steel	AISI 304 / 1.4301
39	Vent plug	Brass; Plastic	Brass; Plastic	Brass; Plastic	Brass; Plastic
40	Fitting	Zinc plated steel; Plastic	Zinc plated steel; Plastic	Zinc plated steel; Plastic	Zinc plated steel; Plastic

\* Available spare parts.

**MATERIALS**

POS. N°	DESIGNATION	PA80	PA80D	PA80T
1	Lower actuator flange	S235JR / 1.0038	S235JR / 1.0038	S235JR / 1.0038
2	Yoke columns	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191
4	Lower actuator cover	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
7	Actuator stem	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401
8	* O-ring	NBR	NBR	NBR
9	* O-ring	–	NBR	NBR
10	* O-ring	NBR	NBR	NBR
11	* Plain bearing	Steel / PTFE	Steel / PTFE	Steel / PTFE
12	* Seal ring	Polyurethane	Polyurethane	Polyurethane
13	Diaphragm plate	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
14	* Diaphragm	Reinforced NBR	Reinforced NBR	Reinforced NBR
15	Diaphragm disk	S355JR / 1.0045	S355JR / 1.0045	S355JR / 1.0045
16	Spring guide	DC01 / 1.0330	DC01 / 1.0330	DC01 / 1.0330
17	* Springs	Spring steel	Spring steel	Spring steel
18	Intermediate actuator stem	–	AISI 316 / 1.4401	AISI 316 / 1.4401
19	Spacer	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401
20	Spacer	AISI 316 / 1.4401	–	–
21	Nut	Zinc plated steel	Zinc plated steel	Zinc plated steel
22	Intermediate cover	–	DD13 / 1.0335	DD13 / 1.0335
24	Upper actuator cover	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
25	Nuts	Zinc plated steel	Zinc plated steel	Zinc plated steel
25A	Washers	Zinc plated steel	Zinc plated steel	Zinc plated steel
26	Bolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
27	Coupling / Travel indicator	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308
28	Adaptor	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301
29	Coupling flange	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301
30	Bolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
31A	Nut	Zinc plated steel	Zinc plated steel	Zinc plated steel
32	* Stem guide	AISI 316L / 1.4404	AISI 316L / 1.4404	AISI 316L / 1.4404
33	Intermediate stem guide	–	AISI 316L / 1.4404	AISI 316L / 1.4404
34	* Belleville washer	Spring steel	Spring steel	Spring steel
35	Stem guide lock nut	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191
37	Nuts	Zinc plated steel	Zinc plated steel	Zinc plated steel
38	Eyebolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
39	Vent plug	Brass; Plastic	Brass; Plastic	Brass; Plastic
40	Fitting	Zinc plated steel	Zinc plated steel	Zinc plated steel
41	Compression fitting	–	Zinc plated steel	Zinc plated steel
42	Tube	–	AISI 304 / 1.4301	AISI 304 / 1.4301

\* Available spare parts.



**ACCESSORIES**

<b>AIR FILTER REGULATOR</b>	<b>SOLENOID VALVE</b>
<b>INDUCTIVE LIMIT SWITCH BOX</b>	<b>MECHANICAL LIMIT SWITCHES</b>
<b>POSITION FEEDBACK UNIT</b>	<b>I/P CONVERTER</b>

**POSITIONERS \***

<b>PNEUMATIC</b>	<b>ELECTROPNEUMATIC</b>	<b>INTELLIGENT ELECTROPNEUMATIC</b>

\* Different models are available within each category.

ORDERING CODES PA										
Group designation	PA	206	S	R	2	A	XX	A1		
PA series pneumatic linear actuators	PA									
<b>Actuator model</b>										
PA10 (100 cm <sup>2</sup> )		010								
PA206 (140 cm <sup>2</sup> )		206								
PA281 (300 cm <sup>2</sup> )		281								
PA341 (445 cm <sup>2</sup> )		341								
PA436 (700 cm <sup>2</sup> )		436								
PA80 (800 cm <sup>2</sup> )		080								
PA80D (1600 cm <sup>2</sup> )		80D								
PA80T (2400 cm <sup>2</sup> )		80T								
<b>Actuator construction</b>										
Mild steel construction (standard)			S							
Stainless steel construction			I							
<b>Direction of action</b>										
Air to open (stem extends by spring force)				R						
Air to close (stem retracts by spring force)				D						
<b>Rated stroke</b>										
20 mm					2					
30 mm					3					
60 mm					6					
<b>Spring range a)</b>										
0,2 – 1 bar						A				
0,4 – 2 bar						B				
0,6 – 1,4 bar						J				
0,8 – 1,6 bar						C				
0,9 – 2,1 bar						K				
1 – 2 bar						D				
1 – 3 bar						E				
1,2 – 2,4 bar						F				
1,2 – 2,8 bar						L				
1,5 – 3 bar						G				
1,6 – 3,2 bar						H				
2 – 4 bar						I				
<b>Options</b>										
None								XX		
Top mounted handwheel								HX		
Stroke limiter								LX		
<b>Yoke design and coupling</b>										
ADCATrol VPC26, V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")									A1	
ADCATrol V16/2 series (DN 65 to DN 100 – 3" to 4")									B1	
ADCATrol V25/2 series (DN 65 to DN 100 – 3" to 4")									B2	
ADCATrol V25/2 series (DN 125 to DN 150 – 5" to 6")									C2	
ADCATrol V25/2 series (DN 200 – 8")									D2	
Other ADCATrol valves b)									XX	
<b>Special versions / Extras</b>										
Full description or additional codes have to be added in case of a non-standard combination										E

a) Not every spring range/stroke combination is available for each actuator model.

b) Exact model and size must be specified – consult the manufacturer.

How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.