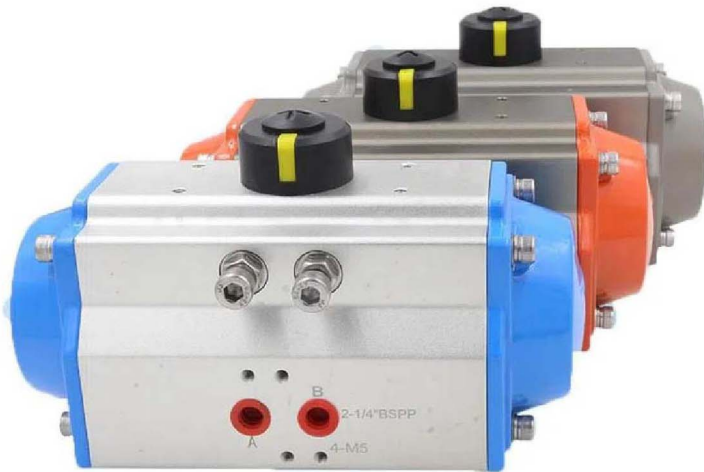




MODEL: AV
Pneumatic Actuator



MODEL: AV Pneumatic Actuator



VOCESTER-ARMATUREN GmbH & CO., KG being the largest valve manufacturer in Elmshorn, Germany. We locate in Lieth 52 A, D-25336 Elmshorn, Germany, a renowned hometown of Engineering Company near Hamburg.

The company covers a land of 64,000 square meters. Through years of consistent innovation and development since 1990, VOCESTER prides itself on having robust technical strength, 50 senior engineers, 80 engineers, 110 technicians and 442 well-trained skilled workers. The use of specialized design software like Pro/E and CAD etc, has shortened the R&D and trial manufacture cycle, and greatly improved the service life and dependability of products. Besides, VOCESTER owns over 380 high precision machine tools, physical & chemical lab equipped with atomic spectrograph, reactor, high precision weighting instrument, heating furnace and other laboratory facilities, as well as impact tester for mechanical test, stretcher, UT and MT nondestructive flaw detector, Brinell, Rockwell and Vickers hardness testers, ultrasonic thickness tester, heat treatment furnace, hydraulic tester and hi-tech facilities enable to produce more 500,000 pieces of valves per year. The adoption of ERP international advanced management system makes production activities quite smooth, and 5S to effect high efficiency operation of the company.

VOCESTER has been certified to ISO9001 and pressure vessel AZ. Now it is undertaking API 6D and CE/PED certification & approved by ABS, low fugitive emission test was approved per TA Luft, fire safe tested & certified by Lloyd's register. Manufactured to ANSI, NF, API, JIS, BS, DIN, and other standards, or nonstandard to meet customers' requests, we produce gate valves, ball valves, check, butterfly valves and globe valves, knife gate valves, slurry valves, upward downward expanded dumping valve, Y-type slurry valve, cast iron & steel also stainless steel (CF8, CF8M, CF3, CF3M). DN8~2000 and 1/4"~80", PN10~320 and 150~2500Lb, serviceable temperature -196~+650°C. Widely used in the industries of petroleum, chemical, papermaking, fertilizer, brewing and metallurgy etc. to handle the corrosive and non-corrosive mediums such as acid, alkali, water, steam, seawater, coal gas, natural gas, oil and etc., our products have been greatly recognized by users for their consistent and superior quality. Based upon the philosophy of "established in valve market and stuck to quality commitment", people of VOCESTER, supported by leading technology and management, are dedicated to providing you with better quality and service.

Great Move

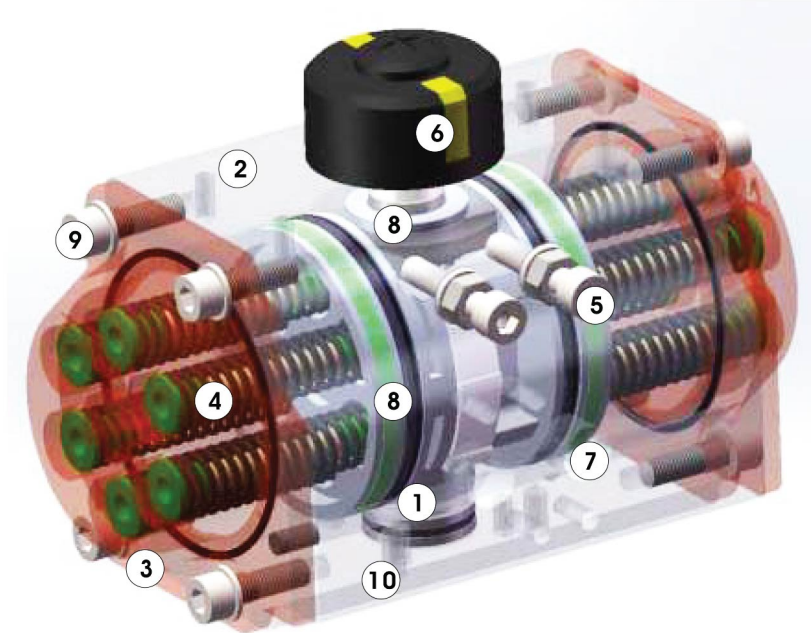
VOCESTER is now proudly to be a part of Clinton Texon Inc, USA, one of the largest investment firms that invest globally across multiple industries.

With this great moving, you can be assure that VOCESTER will be the absolute best solution for every one regards on product, technology and services.



Description And Model Preparation AV

AV Pneumatic Actuator



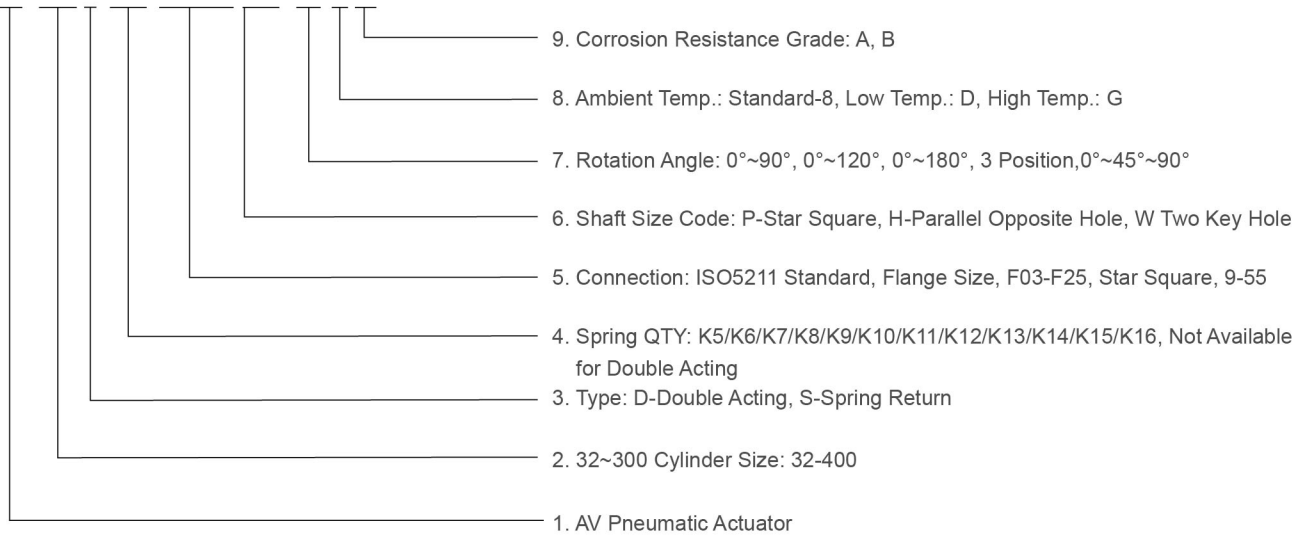
AV new rack and pinion pneumatic actuator by the VOCESTER combines the latest technology at home and abroad, through the three-dimensional model of innovation and optimization of CAD design, beautiful shape compact, modern styling; and adopt practical new materials, new processes, so that the product quality, more reliable; more standard selection of more affordable; products fully meet the latest international standards, technical specifications, to meet current and future needs.

1. Dual piston rack and pinion design of symmetric structures, rapid and smooth movement, high precision, high output power by a simple change in the direction of the piston assembly positions available anti-rotation.
2. High quality extruded aluminum alloy cylinder block, by precision machining the hole and the external surface of hard anodized (anodic oxidation under special circumstances + Teflon coating), longer life, low friction coefficient.
3. Integrated design, all the double acting and single-function actuator models have the same cylinder and end caps, easily removed by installing a spring or spring to change the mode of action.
4. Combined pre-spring break Hean whole group, whether in the assembly process or use on-site in both convenient and safe to install or change the
5. The external side of the two single independent adjustment screw has been number of springs. installed in the valve for the actuator is precisely to facilitate, control valve open and valve closed position, For the whole trip conditioned office is also configured in two cover a longer adjustment screws.
6. Multi-position indicator, on-site visual instructions, consistent with VDINDE3845, NAMUR standard slot, the output can be installed and all the accessories, such as limit switch box, electric positioner, position sensor (Pepper! and Fuchs, Turck).
7. Gas source interface line NAMURstandard, direct safety plaquesNAMUR standard solenoid valve.
8. Rack on the back of the composite bearing and piston guide ring and the output shaft bearings to prevent metal on metal friction and increasing lubrication, so a low friction, long life.
9. All fasteners are stainless steel, long-term corrosion resistance.
10. Connection part of the line with new international standard ISO5211, DIN3337 (F03-F25) makes products with interchangeable, versatile.

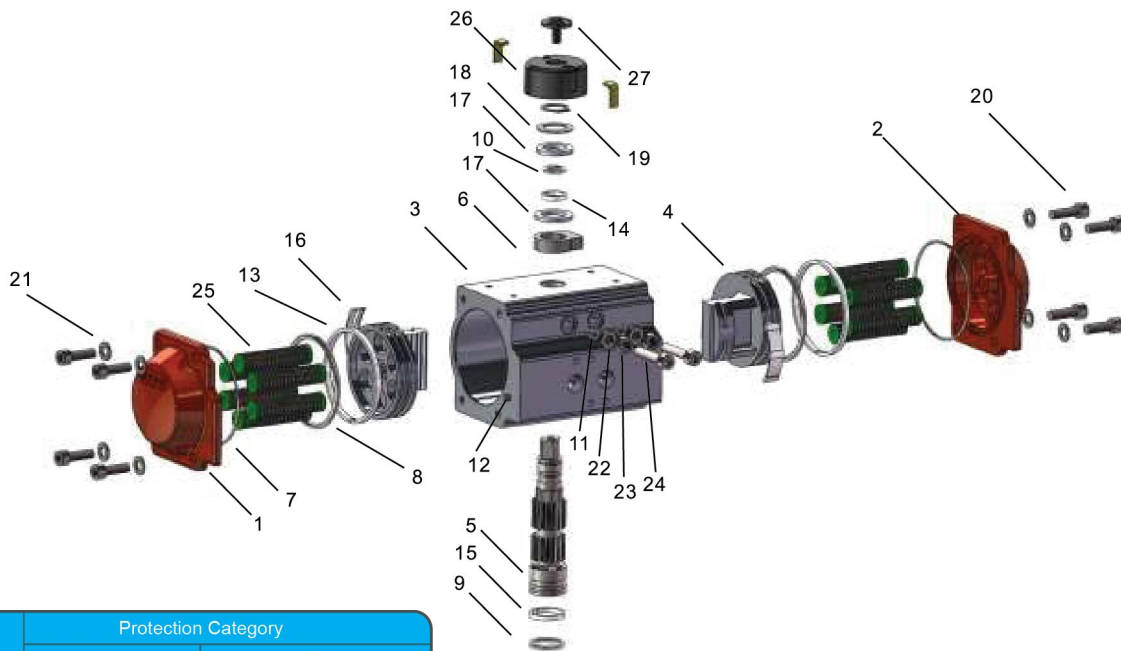
Components and Materials, Corrosion AV

Model Preparation

AV-160 S-K10 F10/12 P27-90-B-A



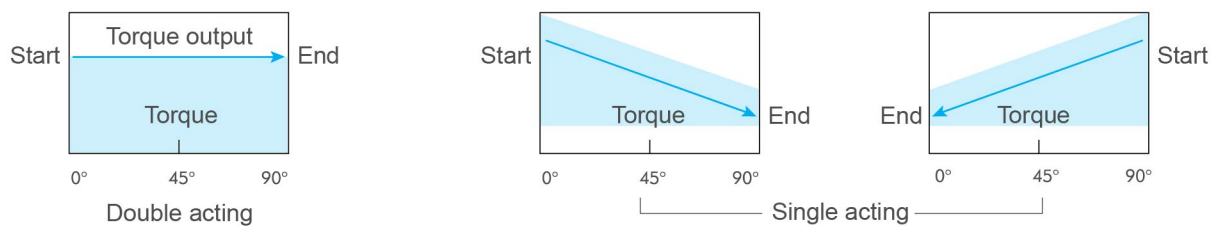
Components and Materials, Corrosion



Parts	Protection Category	
	A	B
Cylinder	Hard Anode Oxidation	Teflon Coating+Anode Sclerosis
Cover	Polyester Coated Metal	Teflon Coating
Output shaft	Carbon Steel Electroless Nickel Plating	Electroless Nickel Plating Or Stainless Steel
Use Occasion	General Situation	General Occasions Or Low Concentrations Of Acitic Environment

Material

No.	Part Name	Material	Selected Materials
1	Left Cover	Aluminum Die Casting	Stainless steel
2	Right Cover	Aluminum Die Casting	Stainless steel
3	Body	Aluminum extrusion	Stainless steel
4	Piston	Aluminum Die Casting	-
5	Output shaft	Carbon Steel	Stainless steel
6	Cam adjustment	Stainless steel	-
7	O-ring (cover)	NBR	Fluorine or silicone rubber
8	O-ring (piston)	NBR	Fluorine or silicone rubber
9	O-ring (output shaft bottom)	NBR	Fluorine or silicone rubber
10	O-ring (output shaft at the top)	NBR	Fluorine or silicone rubber
11	O-ring (adjusting screw)	NBR	Fluorine or silicone rubber
12	Plug (cylinder)	NBR	Fluorine or silicone rubber
13	Bearing (piston)	POM	-
14	Bearing (output shaft at the top)	POM	-
15	Bearing (output shaft bottom)	POM	-
16	Guide with Bearing (Piston back)	POM	-
17	Thrust bearings (output shaft)	POM	-
18	Gasket (output shaft)	Stainless steel	-
19	Flexible file ring	Spring steel	-
20	Cover bolt	Stainless steel	-
21	Cover Gasket	Stainless steel	-
22	Gasket	Stainless steel	-
23	Nut	Stainless steel	-
24	Adjustment bolt	Stainless steel	-
25	Spring Components	Alloy spring steel	-
26	Position indicator	POM	-
27	Screw of indicator	POM	-



Double Acting Operation

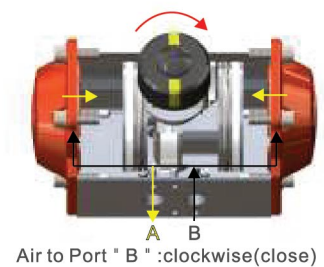
Selection of double acting actuators

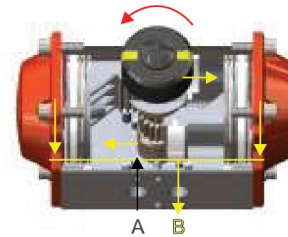
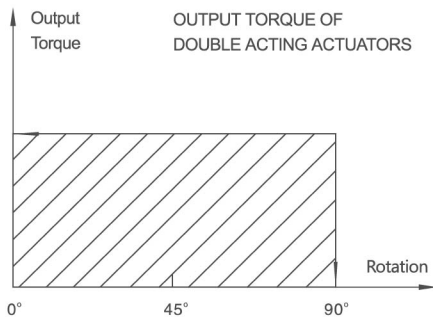
The suggested safety factor for double acting actuators under normal working conditions is 20%-30%

Example:

- The torque needed by valve=100 N.m
- The torque considered safety factor 100X (1+30%) =130 N.m
- Air Supply= 5 Bar

According to double acting torque table, we can choose the minimum model is AV125DA.





Air to Port " A " :counterclockwise(open)

* Pistons must be inverted to reverse actuator rotation

Spring Return Operation Diagram

Selection of Spring Return Actuator

Suggested safety factor for spring return actuators under normal working condition is 30%-50%

For Example:

Required valve torque: 100N.m.

Safety Torque: $100 \times 1.3 = 130\text{N.m.}$

According to output torque table of spring return actuator, model AV145SK10 can be selected

Torque is as following:

Air to Open 0°=324N.m.

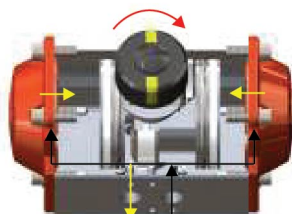
End to Open 90°=212N.m.

Spring to Close 0°=197N.m.

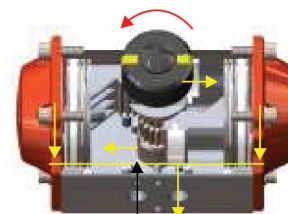
End to Close 90°=310N.m.

All output torque is larger than needed.

Note: Air supply through port B will not affect the output torque of actuator during spring return. On the contrary, it will help spring return.



Air fail to Port " B " :clockwise(close)



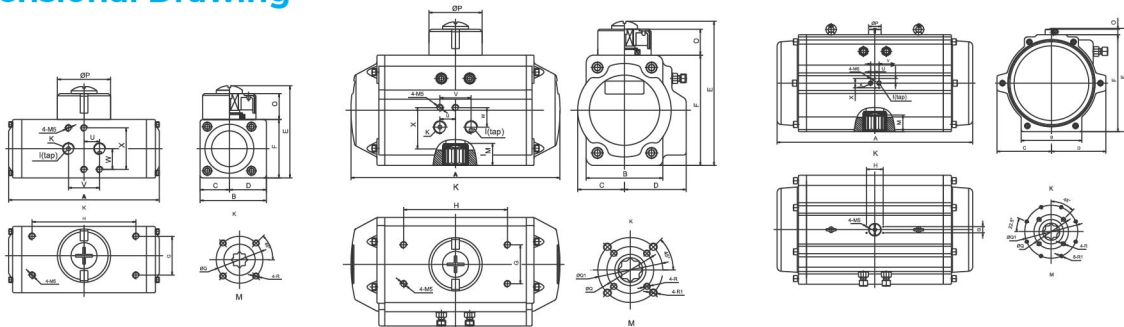
Air to Port " A " :counterclockwise(open)

- Spring force makes the actuator clockwise when the air is exhausted at port " A "
- When air fail to counterclockwise is required, the pistons must be inverted

Double Acting Actuator Output Torque(Nm)

Model	Air Supply Pressure (Bar)									
	2.5	3	3.5	4	4.5	5	5.5	6	7	8
AV-32DA	3.8	4.5	5.3	6.0	6.8	7.5	8.3	9.0	10.5	12.0
AV-50DA	8.3	10.0	11.6	13.3	15.0	16.6	18.3	20.0	23.3	26.6
AV-63DA	14.6	17.6	20.5	23.4	26.4	29.3	32.2	35.2	41.0	47.0
AV-75DA	29.0	35.0	40.7	46.5	52.3	58.1	64.0	69.7	81.4	93.0
AV-88DA	45.7	55.0	64.0	73.2	82.3	91.4	101	110	128	146
AV-100DA	66.4	79.7	93.0	106	120	133	146	159	186	213
AV-115DA	107	129	150	172	193	215	236	258	301	344
AV-125DA	138	166	194	221	249	277	304	332	387	443
AV-145DA	217	261	304	348	391	434	478	521	608	695
AV-160DA	283	340	397	453	510	577	623	680	793	907
AV-190DA	533	640	746	853	959	1066	1173	1279	1492	1706
AV-210DA	651	781	911	1042	1172	1302	1432	1562	1823	2083
AV-240DA	957	1148	1339	1530	1722	1913	2104	2296	2678	3061
AV-270DA	1452	1743	2033	2324	2614	2905	3195	3486	4067	4648
AV-300DA	1993	2391	2790	3188	3587	3985	4384	4782	5579	6376
AV-350DA	2983	3580	4176	4773	5369	5966	6563	7159	8352	9546
AV-400DA	4250	5100	5950	6800	7650	8500	9350	10200	11900	13600

Dimensional Drawing



AV-32

AV-50, AV-63, AV-75, AV-88, AV-100, AV-115, AV-125, AV-145
AV-160, AV-190, AV-210, AV-240, AV-270, AV-300, AV-350

AV-400

Dimensions (mm)

Model	Flange L (ISO5211)		R/R1															
	Q/Q1	M/N(min)	A	B	C	D	E	F	G	H	I	K	O	P	U	V	W	X
AV-32	F03	M5	118	51	22.5	28.5	69	45	30	80	PF	1/8"	20	42	12	24	16	32
	Ø36	10/9																
AV-50	F03/F05	M5/M6	146	47	29	41.5	93	69	30	80	PF	1/4"	20	42	12	24	16	32
	Ø36/Ø50	13/11																
AV-63	F03/F05	M5/M6	163	59	36	47.5	111	85	30	80	PF	1/4"	20	42	12	24	16	32
	Ø36/Ø50	16/14																
AV-75	F05/F07	M6/M8	214	68	43	51	128	102	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	19/17																
AV-88	F05/F07	M6/M8	252	68	49.5	55.5	141	115	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	20/17																
AV-100	F07/F10	M8/M10	270	95	56	64	153	127	30	80	PF	1/4"	20	42	12	24	16	32
	Ø70/Ø102	24/22																
AV-115	F07/F10	M8/M10	316	97	64.5	74.5	180	145	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	24/22																
AV-125	F07/F10	M8/M10	354	97	69	78.5	193	157	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	29/27																
AV-145	F10/F12	M10/M12	418	115	80	87	214	178	30	80/130	PF	1/4"	30	62	12	24	16	32
	Ø102/Ø125	30/27																
AV-160	F10/F12	M10/M12	450	118	89	104	236	200	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø102/Ø125	30/27																
AV-190	F14	M16	552	130	103	103	268	231	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø140	40/36																
AV-210	F14	M16	556	130	113	113	293	257	30	130	PF	1/4"	30	80	12	24	16	32
	Ø140	40/36																
AV-240	F16	M20	630	160	130	130	328	292	30	130	PF	1/4"	30	80	12	24	16	32
	Ø165	50/46																
AV-270	F16	M20	750	160	147	147	367	331	30	130	PF	1/2"	30	80	20	40	22.5	45
	Ø165	50/46																
AV-300	F16	M20	772	180	161	172	390	354	30	130	PF	1/2"	30	90	20	40	22.5	45
	Ø165	50/46																
AV-350	F16/F25	M20/8-M16	860	270	190	190	346	410	30	130	PF	1/2"	30	90	20	40	22.5	45
	Ø165/Ø254	50/46																
AV-400	F16/F25	M20/8-M16	938	291	262	262	502	466	30	130	PF	1/2"	30	90	20	40	22.5	45
	Ø165/Ø254	72/55																

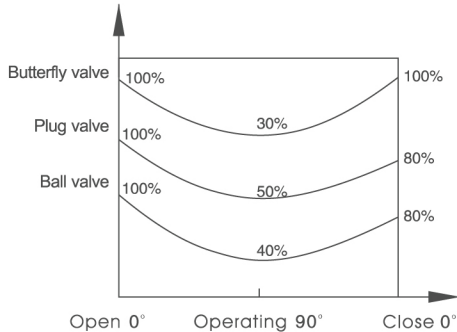
MODEL: AV Pneumatic Actuator



Single Acting Actuator Output Torque(Nm)

Model	Spring Q.ty	2.5 bar		3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar		Spring Torque			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°		
AV-50SA	5	4.6	2.3	6.3	4	7.9	5.6	9.6	7.3	11.3	9	12.9	10.6	13.9	11.1	14.8	11.6	17.4	13.7	20	15.8	13.4	6	3.7	
	6	3.9	1.1	5.6	2.8	7.2	4.4	8.9	6.1	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	7.2
	7			4.8	1.6	6.4	3.2	8.1	4.9	9.8	7	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	8.4	4.4	
	8			5.6	2.8	7.2	4.4	8.9	6.1	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	5.2
	9			6.4	3.2	8.1	4.9	9.8	6.1	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	6.6
	10			7.2	4.4	8.9	6.1	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	10.8	7.4	
	11			8.1	4.9	9.8	6.1	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	12.8	8.9	
	12			8.8	5.6	10.6	8	12.2	9.4	11.4	8.2	13.1	9.9	14.8	11.6	17.4	13.7	20	15.8	13.4	14.4	10.1	14.4	8.1	
	AV-63SA	5	8.1	4	11.1	7	14	9.9	16.9	12.8	19.9	15.8	22.8	18.7	24.4	19.5	26.1	20.4	30.6	24	35.3	28	25.8	10.6	6.5
		6	6.8	1.9	9.8	4.9	12.7	7.8	15.6	10.7	18.6	13.7	21.5	16.6	24.4	19.5	26.1	20.4	29.3	22	35.3	28	25.8	12.7	7.8
		7			8.5	2.8	11.4	8.6	16.6	11.7	21.5	16.6	24.4	19.5	26.1	20.4	29.3	22	29.3	22	35.3	28	25.8	14.8	9.1
		8			10.1	3.5	13.3	13	21.5	16.6	24.4	19.5	26.1	20.4	29.3	22	35.3	28	29.3	22	35.3	28	25.8	17	10.4
9				11.7	4.4	15.4	14.7	25.8	19.9	31.7	24.3	33.8	26.5	35.3	28	35.3	28	29.3	22	35.3	28	25.8	19	11.7	
10				13.5	5.6	18.1	17.1	31.7	24.3	33.8	26.5	35.3	28	35.3	28	35.3	28	29.3	22	35.3	28	25.8	21	12.9	
11				15.1	7.1	20.1	20.1	35.3	28	35.3	28	35.3	28	35.3	28	35.3	28	29.3	22	35.3	28	25.8	22	15.5	
12				16.1	8.8	22.1	22.1	35.3	28	35.3	28	35.3	28	35.3	28	35.3	28	29.3	22	35.3	28	25.8	23.3	14.3	
AV-75SA		5	16.1	8	22.1	14	27.8	19.7	33.6	25.5	39.4	31.3	45.2	37.1	48.5	38.8	51.7	40.3	60.8	47.8	69.8	55.2	42.6	21	12.9
		6	13.5	3.8	19.5	11.4	25.2	15.5	28.5	21.3	33.6	25.5	39.4	31.3	45.2	37.1	48.5	38.8	51.7	40.3	69.8	55.2	42.6	21	15.5
		7			17	5.6	22.7	17.7	33.6	25.5	39.4	31.3	45.2	37.1	48.5	38.8	51.7	40.3	60.8	47.8	69.8	55.2	42.6	21	17.7
		8			20.1	7.1	27.8	20.1	35.3	28	35.3	28	35.3	28	35.3	28	35.3	28	29.3	22	35.3	28	25.8	23.3	14.3
	9			22.1	8.8	30.6	22.1	35.3	28	35.3	28	35.3	28	35.3	28	35.3	28	29.3	22	35.3	28	25.8	25.4	15.6	
	10			24.4	11.4	34.9	25.5	41.7	31.3	45.2	37.1	48.5	38.8	51.7	40.3	51.7	40.3	60.8	47.8	69.8	55.2	42.6	27.8	17.7	
	11			26.7	14.3	39.7	31.3	45.2	37.1	48.5	38.8	51.7	40.3	51.7	40.3	60.8	47.8	69.8	55.2	67.2	51.7	40.3	28	20.6	
	12			29.3	17.7	44.9	35.3	51.7	40.3	51.7	40.3	51.7	40.3	60.8	47.8	69.8	55.2	67.2	51.7	67.2	51.7	40.3	31	23.2	
	AV-88SA	5	25.5	12.7	34.8	22	43.8	31	53	40.3	62.1	49.3	71.2	58.4	76.7	61.4	81.7	63.7	95.6	75.1	110	86.5	66	33	20.2
		6	21.4	6.1	30.7	15.4	39.7	24.4	48.9	36.6	54.8	42.7	62.3	51.8	67.7	54.8	72.7	57.1	83.5	65.5	106	80	72.7	33	24.3
		7			26.7	8.7	37.8	26.7	44.9	33.6	54.8	42.7	62.3	51.8	67.7	54.8	72.7	57.1	83.5	65.5	106	80	72.7	33	27.8
		8			31.6	11.1	44.9	33.6	54.8	42.7	62.3	51.8	67.7	54.8	72.7	57.1	83.5	65.5	106	80	106	80	72.7	33	32.4
9				35.7	13.5	51.7	40.3	62.1	49.3	71.2	58.4	76.7	61.4	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	80	33	36.6	
10				40.3	16.6	58.4	45.2	71.2	58.4	76.7	61.4	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	110	86.5	80	33	40.5	
11				44.9	19.9	67.2	51.7	79.1	62.1	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	110	86.5	110	86.5	80	33	44.9	
12				49.3	22.1	76.7	61.4	90.6	72	90.6	72	103.6	85	111	88.3	118	91.7	139	109	160	127	98	33	49.3	
AV-100SA		5	37	18.4	50.3	31.7	63.6	45	76.6	58	90.6	72	103.6	85	111	88.3	118	91.7	139	109	160	127	98	48	29.4
		6	31.1	8.4	44.4	22	57.7	35.3	64.8	48.9	62.3	51.8	71.2	58.4	76.7	61.4	81.7	63.7	95.6	75.1	110	86.5	80	48	35.3
		7			38.5	12.4	51.7	40.3	62.1	49.3	71.2	58.4	76.7	61.4	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	80	48	41.2
		8			46	16.1	61.4	48.9	79.1	62.1	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	110	86.5	110	86.5	80	48	53
	9			51.7	19.9	67.2	51.7	79.1	62.1	81.7	63.7	81.7	63.7	95.6	75.1	110	86.5	110	86.5	110	86.5	80	48	58.9	
	10			58.4	24.4	76.7	61.4	90.6	72	90.6	72	103.6	85	111	88.3	118	91.7	139	109	160	127	98	48	66.7	
	11			62.3	28	81.7	63.7	95.6	75.1	95.6	75.1	103.6	85	111	88.3	118	91.7	139	109	160	127	98	48	73.3	
	12			68.3	32	89.6	72	103.6	85	111	88.3	118	91.7	139	109	160	127	98	142	107	142	107	98	48	79.1
	AV-115SA	5	59.4	29.3	81.4	51.3	102.4	72.3	124	94.3	145	115	167	137	179	143	191	149	225	177	258	204	158	100	61.3
		6	49.8	13.8	71.8	35.8	92.8	56.8	115	78.8	145	115	158	122	175	137	182	134	225	177	258	204	158	100	61.3
		7			83.3	41	105	63	126	84	148	115	167	137	179	143	191	149	225	177	258	204	158	100	61.3
		8			92.8	48.9	115	78.8	145	115	158	122	175	137	179	143	191	149	225	177	258	204	158	100	61.3
9				102.4	56.8	137	94	160	121	188	149	216	177	230	184	246	192	289	227	333	263	204	158	100	
10				108.2	66	147	101	175	129	216	177	230	184	246	192	289	227	333	263	204	158	100	100	61.3	
11				111	73.8	158	105	163	116	216	177	230	184	246	192	289	227	333	263	204	158	100	100	61.3	
12				118	86.3	167	126	188	149	216	177	230	184	246	192	289	227	333	263	204	158	100	100	61.3	
AV-125SA		5	76.7	38	104.7	66	132.7	94	160	121	188	149	216	177	230	184	246	192	289	227	333	263	204	158	100
		6	64.4	18	80.2	26	108.2	54	135	81	163	109	191	137	216	144	234	172	289	227	333	263	204	158	100
		7			96	34	123	61	151	89	188	129	216	144	234	172	289	227	333	263	204	158	100	100	61.3
		8			111	41	142	72	171	105	216	144	234	172	289	227	333	263	204	158	100	100	158	100	100
	9			126	49</																				

Sizing Information and How to Order



For Example:

Max. Butterfly Valve Torque: 80N.m.
Open Torque $80 \times 30\% = 24\text{N.m.}$
Air Pressure: 6 bar

We can choose AV115SA
Air to Open $0^\circ = 159\text{N.m.} > 80\text{N.m.}$
End to Open $90^\circ = 101\text{N.m.} > 24\text{N.m.}$
Spring to Close $90^\circ = 157\text{N.m.} > 24\text{N.m.}$
End to Close $0^\circ = 98\text{N.m.} > 80\text{N.m.}$

Figures above show normal opening of butterfly valve can be satisfied.

Operating Type (Double Acting and Spring Return)



Air supply connection is designed in accordance with NAMUR standard to install solenoid valves.

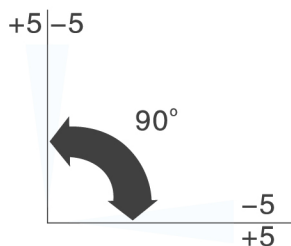


The Namur drive pinion and the Namur top mounting connection permit direct installation of accessories such as limitswitch box and positioner.



Bottom mounting connection is designed in accordance with ISO5211, DIN3337 standards for direct mounting with valve gear boxes or mounting brackets.

Operating Conditions:



- 1. Operating media**
Dry or lubricated air, or the non-corrosive gases
The maximum particle diameter must less than $30\mu\text{m}$
- 2. Air supply pressure**
The minimum supply pressure is 2.5 Bar
The maximum supply pressure is 8 Bar
- 3. Operating temperature**
Standard: $-20^\circ\text{C} \sim +80^\circ\text{C}$
Low temperature: $-35^\circ\text{C} \sim +80^\circ\text{C}$
High temperature: $-15^\circ\text{C} \sim +150^\circ\text{C}$
- 4. Travel adjustment**
Have adjustment range of $\pm 5^\circ$ for the rotation at 0° and 90°
- 5. Application**
Either indoor or outdoor

Air Consumption

Model	Max. Pressure	Rotation Angle	Temp.	Lap No. For Each 1 Degree Stroke	Diameter	Cylinder Close	Volume Open	Open/Close Time Close	Open	Weight	
AV-50SA	Lubrication or dry of compressed air 8bar	(0°-90°) ± 5° or full itinerary 0°-90°	B (normal) NBR O-ring -20~+80°C G(High Temperature) Viton O-ring -15~+150°C D(Low Temperature) Silicone O-ring -40~+80°C	1/6	50	0.1	0.2	DA 0.6 SR 2.0	DA 0.6 SR 0.5	DA 1.10 SR 1.15	... 0.010
AV-63SA				1/6	63	0.2	0.3	DA 0.7 SR 2.0	DA 0.7 SR 1.0	DA 1.62 SR 1.80	... 0.015
AV-75SA				1/5	75	0.3	0.5	DA 0.8 SR 2.0	DA 0.7 SR 1.0	DA 2.75 SR 3.15	... 0.036
AV-88SA				1/5	88	0.5	0.8	DA 0.9 SR 2.5	DA 0.8 SR 1.0	DA 3.80 SR 4.40	... 0.046
AV-100SA				1/5	100	0.7	1.1	DA 1.0 SR 3.0	DA 1.0 SR 1.0	DA 5.20 SR 5.95	... 0.050
AV-115SA				1/4	115	1.2	1.8	DA 1.5 SR 3.0	DA 1.5 SR 1.0	DA 7.85 SR 9.05	... 0.094
AV-125SA				1/4	125	1.5	2.3	DA 2.0 SR 4.0	DA 2.0 SR 1.0	DA 10.00 SR 12.00	... 0.150
AV-145SA				1/4	145	2.4	3.8	DA 2.5 SR 4.0	DA 2.5 SR 1.0	DA 14.70 SR 17.20	... 0.200
AV-160SA				1/4	160	3.1	4.9	DA 4.0 SR 4.0	DA 3.0 SR 1.5	DA 20.85 SR 24.45	... 0.300
AV-190SA				1/4	190	4.5	7.3	DA 5.0 SR 5.0	DA 4.0 SR 3.0	DA 31.05 SR 36.80	... 0.479
AV-210SA				1/4	210	6.8	11.2	DA 5.0 SR 6.0	DA 5.0 SR 3.0	DA 39.00 SR 45.50	... 0.500
AV-240SA				1/4	240	10	15.2	DA 6.0 SR 12	DA 6.0 SR 4.0	DA 53.00 SR 64.00	... 0.917
AV-270SA				1/4	270	14.5	21.4	DA 8.0 SR 15	DA 8.0 SR 6.0	DA 76.00 SR 95.20	... 1.600
AV-300SA				1/4	300	23.8	29.7	DA 12 SR 18	DA 12 SR 8.0	DA 100.0 SR 128.2	... 2.350
AV-350SA				1/4	350	35.1	46	DA 14 SR 20	DA 14 SR 10	DA 186.0 SR 216.0	... 2.501
AV-400SA				1/4	400	52.6	56	DA 15 SR 25	DA 15 SR 12	DA 243.0 SR 279.0	... 3.001

Air consumption is dependent on air supply pressure, open-close stroke, volume and motion times, which is calculated as following:
 $L/Min = \text{Air Volume (Opening Volume + Closing Volume)} * \text{Air Supply Pressure (Kpa)} + 101.3/101.3 * \text{Motion Times (Min.)}$

Common Faults, Inspection and Troubleshooting

Failure Phenomenon	Inspectron Items	Solution
Pneumatic valve can not move	1. When solenoid valve is normal, coil is burned or not, or whether solenoid valve core is blocked by foreign matter.	Replace solenoid valve and coils and remove foreign matter
	2. Test the pneumatic actuator separately with air supply, check whether sealing ring and cylinder is damaged.	Replace the damaged sealing ring and cylinder
	3. Impurities in the valve blocks the valve core.	Remove impurities and replace damaged parts
	4. The handle is in manual position.	Move the handle to pneumatic position
Slow motion, crawling	1. Air supply pressure is not enough.	Increase air supply pressure (0.4-0.7 Mpa)
	2. Output torque of pneumatic actuator is too small.	Choose a larger pneumatic actuator model
	3. Valve coil or other valve components are too tight.	Reassemble and readjustments
	4. Air supply pipe is plugged and flow is too small.	Clear the plug and replace the filter
Reply devices without signal	1. Short circuit or disconnection of power occurs.	Inspect and repair power circuit
	2. Cam position inside the switch box is not accurate.	Adjust the cam to correct position
	3. Micro switches is damaged.	Replace micro switches

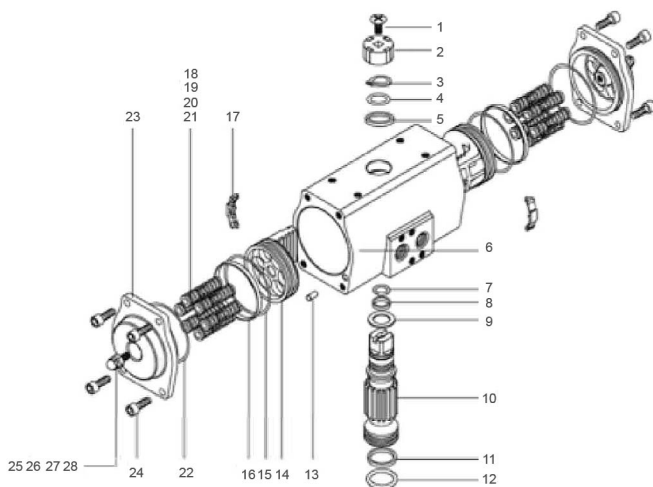
AV Stainless Steel Pneumatic Actuator

Features

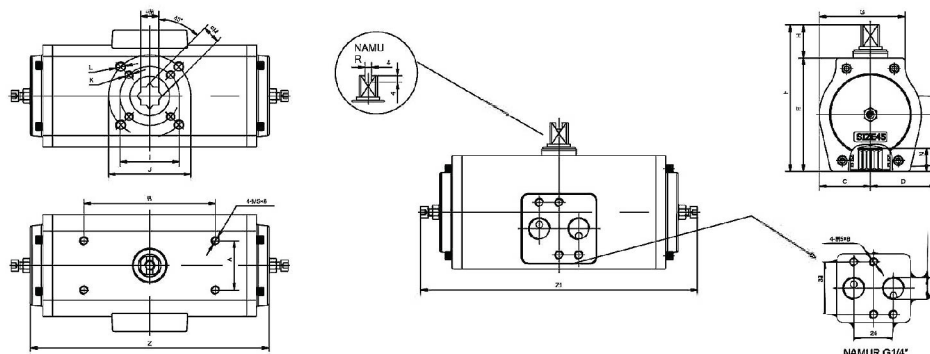


1. ASTM 316L, 316, 304, 303 stainless steel pneumatic actuator with electro-polish finish offer excellent resistance to most corrosive chemicals as well as industrial atmospheres.
2. Dual piston rack and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation, reverse rotation can be accomplished in the field by simply inverting the pistons.
3. Multiple bearings and guides on racks and pistons, low friction, high cycle life and prevent shaft blowout.
4. Modular preloaded spring cartridge design, with coated spring for simple versatile range, greater safety and corrosion resistance, longer cycle life.
5. Fully machined teeth on piston and pinion for accurate low backlash rack and pinion engagement, maximum efficiency
6. Stainless steel fasteners for long term corrosion resistance.
7. Full conformance to the latest specifications: ISO5211, DIN 3337 and Namur or product interchangeability and easy mounting of solenoids, limit switches and other accessories.

Material



No.	Part Name	Material
1	Indicator screw	POM
2	Indicator	POM
3	Snap Ring	Spring steel
4	Washer	Stainless steel
5	Trust bearing	POM
6	Body	Stainless steel
7	O-ring(top)	Viton/NBR
8	Bearing top	POM
9	Trust bearing	POM
10	Pinion	Stainless steel
11	Bearing bottom	POM
12	O-ring bottom	Viton/NBR
13	Plug	NBR
14	Piston	Aluminum Die Casting
15	Piston o-ring	Viton/NBR
16	Piston Bearing	POM
17	Guide piston	POM
18	Spring	Spring steel
19	Spring retainer(L)	Nylon 66
20	Spring retainer(R)	Nylon 66
21	Retainer connector	Brass
22	End cap o-ring	Viton/NBR
23	End cap	Stainless steel
24	End cap stop screw	Stainless steel
25	Adjust screw	Stainless steel
26	Adjust screw nut	Stainless steel
27	Adjust screw washer	Stainless steel
28	Adjust screw o-ring	Viton/NBR



AV Stainless Steel Pneumatic Actuator

Pneumatic Actuator Dimensions

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Z	Z1	Air
AV-45	30	80	31	39	68	88	52	20	36	50	M5×7	M6×8	11	14	145	165	1/4"NPT
AV-60	30	80	38	47	84	104	64	20	36	50	M5×8	M6×10	14	15.5	165	185	1/4"NPT
AV-85	30	80	49.5	53	107	127	76.5	20	50	70	M6×10	M8×12	17	20	200		1/4"NPT
AV-105	30	80	58	63.5	134	154	88	20	70	102	M8×13	M10×16	22	26	252		1/4"NPT
AV-125	30	130	69	68.5	157	187	100.5	30	70	102	M8×13	M10×16	22	29	338		1/4"NPT
AV-140	30	130	79.5	80	178	208	122	30	102	125	M10×16	M12×20	27	30	393		1/4"NPT
AV-160	30	130	90	90	200	230	146	30	102	125	M10×18	M12×18	27	30	442	475	1/4"NPT
AV-210	30	130	122	110	257	287	184	30		140		M16×20	36	40	596	628	1/4"NPT

Double Acting Actuator Output Torque (Nm)

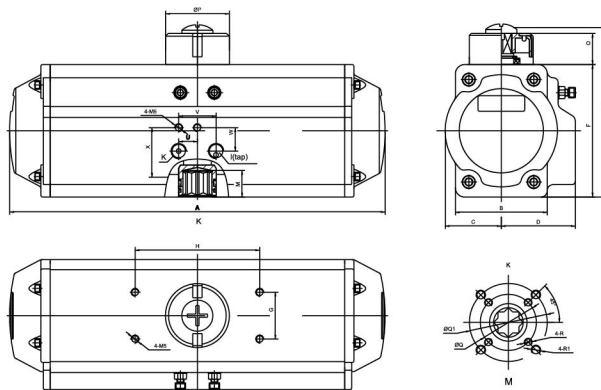
Model	Air Supply Pressure(Bar)										
	2.5	3	3.5	4	4.5	5	5.5	6	7	8	
AV-45DA	8.3	10.0	11.6	13.3	15.0	16.6	18.3	20.0	23.3	26.6	
AV-60DA	14.6	17.6	20.5	23.4	26.4	29.3	32.2	35.2	41.0	47.0	
AV-85DA	43.3	52.0	60.7	69.3	78.0	86.7	95.3	104	121	139	
AV-105DA	81.4	97.6	114	130	146	163	179	195	228	260	
AV-125DA	138	166	194	221	249	277	304	332	387	443	
AV-140DA	217	261	304	348	391	434	478	521	608	695	
AV-160DA	283	340	397	453	510	577	623	680	793	907	
AV-210DA	683	820	957	1093	1230	1367	1503	1640	1913	2187	

Single Acting Actuator Output Torque(Nm)

Model	Air Pressure Spring Q.ty	2.5 bar		3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar		Spring Torque					
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°				
AV-45SA	5	4.6	2.3	6.3	4	7.9	5.6	9.6	7.3	11.3	9	12.9	10.6	13.9	11.1	14.8	11.6	17.4	13.7	20	15.8	22	17.7	6	3.7		
	6	3.9	1.1	5.6	2.8	7.2	4.4	8.9	6.1	10.6	8.1	12.2	9.4	11.1	9.9	14.1	10.4	16.7	12.5	19.2	14.6	20	17.7	7.2	4.4		
	7			4.8	1.6	6.4	3.2	8.1	4.9	9.8	6.6	11.4	8.2	12.4	8.7	14.1	9.2	17.4	12.5	20	15.8	22	17.7	8.4	4.4		
	8					5.7	2	7.4	3.7	8.1	5.4	10.7	7.7	12.4	8.7	14.1	10.4	17.4	12.5	20	15.8	22	17.7	9.6	5.9		
	9							6.7	2.5	8.4	4.2	10	5.8	11.7	7.5	13.4	9.2	16.7	12.5	20	15.8	22	17.7	10.8	6.6		
	10									9.2	4.6	10.9	6.3	12.6	8	15.9	11.3	19.2	14.6	20	15.8	22	17.7	12	7.4		
	11									10.2	5.1	11.9	6.8	13.4	8.8	17.4	12.5	20	15.8	22	17.7	20	17.7	13.4	8.1		
	12									7.6	3	8.5	3.4	9.4	3.9	11.1	5.6	14.4	8.9	17.7	12.2	14.4	17.7	14.4	8.9		
	AV-60SA	5	8.1	4	11.1	7	14	9.9	16.9	12.8	19.9	15.8	22.8	18.7	24.4	19.5	26.1	20.4	30.6	24	32	25.3	28	19	10.6	6.5	
		6	6.8	1.9	9.8	4.9	12.7	7.8	15.6	10.7	18.6	13.7	21.5	16.6	23.1	17.4	24.8	18.2	30.6	24	32	25.3	28	19	12.7	7.8	
		7			8.5	2.8	11.4	5.7	14.3	8.6	17.3	11.6	20.2	14.5	23.1	17.4	26.1	20.4	30.6	24	32	25.3	28	19	14.8	9.1	
		8					10.1	3.5	13	6.4	16	9.4	18.9	12.3	21.8	15.2	24.8	18.2	30.6	24	32	25.3	28	19	17	10.4	
9								11.7	4.4	17.4	7.4	21.6	13.3	25.1	13.2	23.5	16.2	30.6	24	32	25.3	28	19	19	11.7		
10										13.4	5.2	16.3	8.1	19.2	11	22.2	14	30.6	24	32	25.3	28	19	21.2	13		
11												15	6	17.9	8.9	20.9	11.9	30.6	24	32	25.3	28	19	23.3	14.3		
12												16.6	6.8	19.6	9.8	25.4	15.6	31.4	21.6	25.4	15.6	25.4	15.6	25.4	15.6		
AV-85SA		5	27.5	20.3	36.2	29	44.9	37.7	53.5	46.3	62.2	55	70.9	63.7	78.3	67.7	83.5	71.8	95.7	84.2	110.5	97.6	110.5	97.6	23	15.8	
		6	24.3	15.7	33	24.4	41.7	33.1	50.3	41.7	59	50.4	67.7	59.1	73.2	63.1	81.9	71.8	95.7	84.2	110.5	97.6	110.5	97.6	23	19	
		7			29.9	19.8	38.6	28.5	47.2	37.1	55.9	45.8	64.6	54.5	70.2	63.1	81.9	71.8	95.7	84.2	110.5	97.6	110.5	97.6	23	22.1	
		8					35.4	23.9	44	32.5	52.7	41.2	61.4	49.9	70	58.5	78.7	67.2	95.7	84.2	110.5	97.6	110.5	97.6	23	25.3	
	9							40.8	27.9	49.5	36.6	58.2	45.3	66.8	53.9	75.5	62.6	95.7	84.2	110.5	97.6	110.5	97.6	23	28.5		
	10									46.4	32	65.1	40.7	74.4	58	89.4	75	110.5	97.6	110.5	97.6	110.5	97.6	23	31.6		
	11											55.1	40.7	63.7	49.3	72.4	58	95.7	84.2	110.5	97.6	110.5	97.6	23	34.8		
	12											57.3	36.1	60.5	44.7	69.2	53.4	86.2	70.4	104.2	88.4	83.8	55.2	38	34.8		
	AV-105SA	5	49.8	32.2	66	48.4	82.4	64.8	98.4	80.8	114.4	96.8	131.4	113.8	141	119.9	150.7	126.1	177.4	149.3	203.1	171.4	203.1	171.4	49.2	31.6	
		6	43.4	22.3	59.6	38.5	76	54.9	92	70.9	108	86.9	125	103.9	141	119.9	150.7	126.1	177.4	149.3	203.1	171.4	203.1	171.4	49.2	31.6	
		7			53.3	28.7	69.7	45.1	85.7	61.1	101.7	77.1	118.7	94.1	135	110.1	144.4	116.3	177.4	149.3	203.1	171.4	203.1	171.4	49.2	31.6	
		8					63.4	35.3	79.4	51.3	95.4	67.3	112.4	84.3	128.4	100.3	144.4	116.3	177.4	149.3	203.1	171.4	203.1	171.4	49.2	31.6	
9								73.1	41.4	82.7	47.6	93.4	54.7	103.1	60.9	119.1	76.9	152.1	109.9	184.1	141.9	184.1	141.9	49.2	31.6		
10																									49.2	31.6	
11																										59.1	38
12																										68.9	44
AV-125SA		5	76.7	38	104.7	66	132.7	94	160	121	188	149	216	177	230	184	246	192	289	227	333	263	200	150	100	61.3	
		6	64.4	18	92.4	46	120.4	74	147	101	175	129	203	157	218	164	226	174	289	227	333	263	200	150	100	73.6	
		7			80.2	26	108.2	54	123	81	163	109	191	137	206	144	204	152	289	227	333	263	200	150	100	85.8	
		8					96	34	111	41	139	69	167	97	194	124	222	152	277	207	333	263	200	150	100	98	
	9									111	41	126	49	154	77	181	104	209	132	264	187	320	243	200	100	110	
	10													142	57	169	84	197	112	252	167	308	223	200	123		
	11													157	64	185	92	240	147	296	203	240	147	200	135		
	12																									147	
	AV-140SA	5	120.7	60	164.7	104	207.7	147	252	191	295	234	338	277	362	290	386	301	454	357	522	412	300	220	150	118	
		6	101	29	145	73	188	116	232	160	275	203	318	246	326	250	336	270	4								

AVC 120°/180° Double Acting Actuator

120°/180° Actuator Dimension and Connection Size (Double Acting)

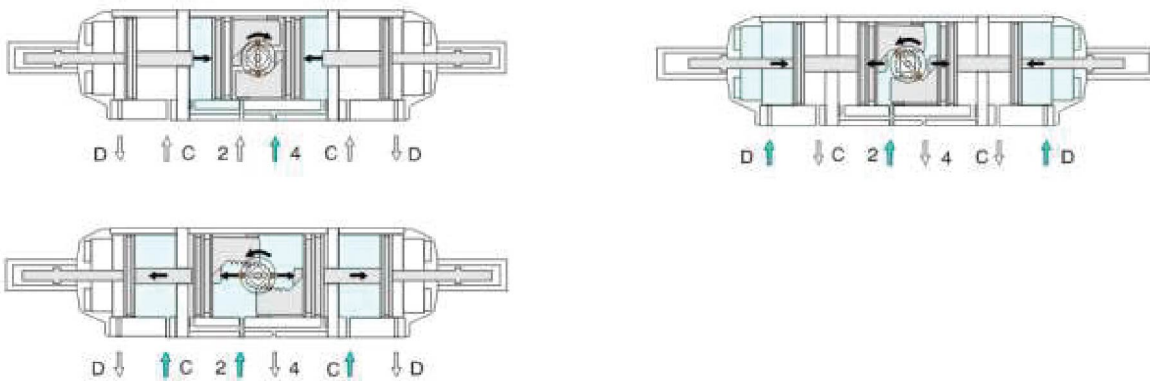


- 1. We can provide other item actuators according to your requirement
- 2. We can provide different stroke actuator, such as 40°/60° etc

Dimensions

Model	FLANGE L(ISO5211)		R/R1																
	Q/Q1	M/N(min)	A(120)	A(180)	B	C	D	E	F	G	H	I	K	O	P	U	V	W	X
AVC-50DA	F03/F05	M5/M6	207	225	47	29	41.5	95	69	30	80	PF	1/4"	20	42	12	24	16	32
	Ø36/Ø50	13/11																	
AVC-63DA	F03/F05	M5/M6	230	250	59	36	47.5	111	85	30	80	PF	1/4"	20	42	12	24	16	32
	Ø36/Ø50	16/14																	
AVC-75DA	F05/F07	M6/M8	300	330	68	43	51	128	102	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	19/17																	
AVC-88DA	F05/F07	M6/M8	325	358	68	49.5	55.5	141	115	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	20/17																	
AVC-100DA	F07/F10	M8/M10	360	400	95	56	64	153	127	30	80	PF	1/4"	20	42	12	24	16	32
	Ø70/Ø102	24/22																	
AVC-115DA	F07/F10	M8/M10	420	465	97	64.5	74.5	181	145	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	24/22																	
AVC-125DA	F07/F10	M8/M10	470	520	97	69	78.5	193	157	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	29/27																	
AVC-145DA	F10/F12	M10/M12	525	580	115	80	87	214	178	30	80/130	PF	1/4"	30	62	12	24	16	32
	Ø102/Ø125	30/27																	
AVC-160DA	F10/F12	M10/M12	570	630	118	89	104	236	200	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø102/Ø125	30/27																	
AVC-190DA	F14	M16	655	720	130	103	103	267	231	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø140	40/36																	
AVC-210DA	F14	M16	770	840	130	113	113	293	257	30	130	PF	1/4"	30	80	12	24	16	32
	Ø140	40/36																	
AVC-240DA	F16	M20	840	916	160	130	130	328	292	30	130	PF	1/4"	30	80	12	24	16	32
	Ø165	50/46																	
AVC-270DA	F16	M20	940	1020	160	147	147	367	331	30	130	PF	1/2"	30	80	20	40	22.5	45
	Ø165	50/46																	
AVC-300DA	F16	M20	1140	1230	180	161	172	390	354	30	130	PF	1/2"	30	90	20	40	22.5	45
	Ø165	50/46																	

Three Position Pneumatic Actuator



Three position pneumatic actuators have two kinds of models $0^\circ -45^\circ -90^\circ$ or $0^\circ -90^\circ -180^\circ$, In intake 2.the piston move to both ends after air inflow, it through both ends design has auxiliary piston produces mechanical constraints to realize the middle position it can use outside ends adjusting bolt easily adjust intermediate position angle directly such as $20^\circ 30^\circ 50^\circ 75^\circ$ or $95^\circ 120^\circ 130^\circ 150^\circ 175^\circ$, etc.

Three position pneumatic actuators which operating need to design a set of electromagnetic valve control loop system to complete the operation, the control principle is as follows:

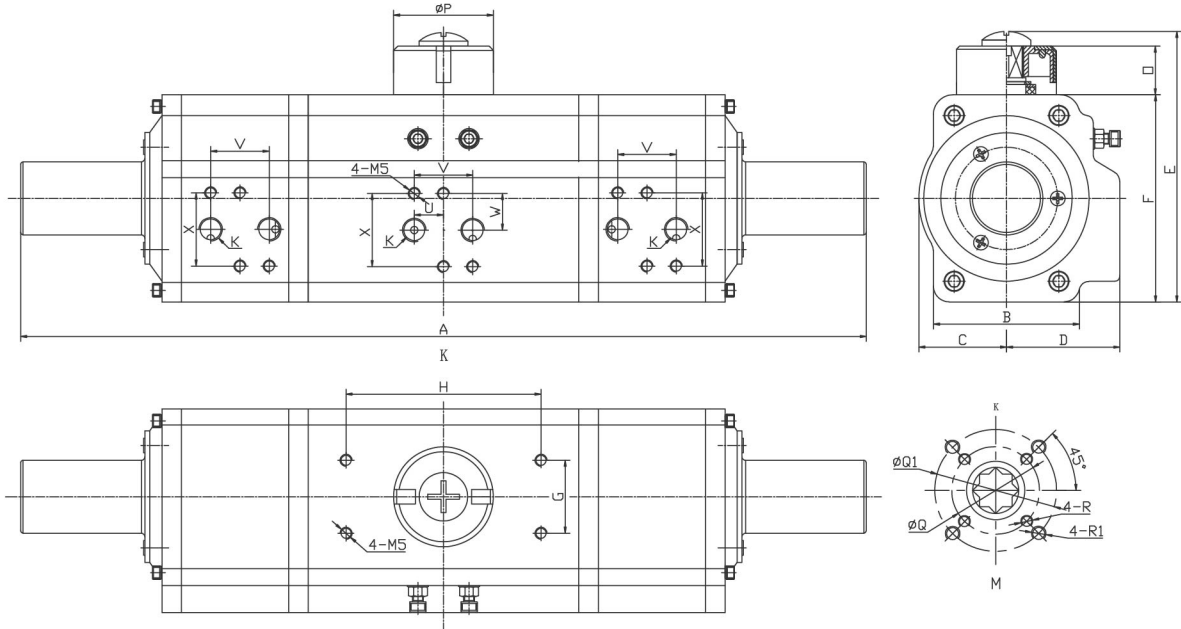
Air pressure enter 2 hole and D hole ate one time, then air from 4 hole and C hole education, 2 hole as internal piston movement, D hole through assisted piston push-rod limit internal piston positioning at a predetermined middle.

Air pressure enter 2 hole and C hole at one time, then air from 4 hole and D hole education, 2 hole internal piston continues to move, C hole remove auxiliary piston push-rod limit positioning, it make the internal piston smooth arrival in full-open position.

Air pressure into 4 hole, then air from 2 hole education, internal piston move to the middle direction then reach full-closed position.

We can provide 0-45-90 spring return type specification, When lose air, or cut power (or airfailure), it can return to full-closed position, through the spring force inner piston.

Three Position Pneumatic Actuator



Dimensions

Model	FLANGE L (ISO5211)	R/R1	A	B	C	D	E	F	G	H	I	K	O	P	U	V	W	X
	Q/Q1	M/N(min)																
SAV-63DA	F03/F05	M5/M6	347	59	36	47.5	111	85	30	80	PF	1/4"	20	42	12	24	16	32
	Ø36/Ø50	16/14																
SAV-75DA	F05/F07	M6/M8	412	68	43	51	128	102	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	19/17																
SAV-88DA	F05/F07	M6/M8	538	68	49.5	55.5	141	115	30	80	PF	1/4"	20	42	12	24	16	32
	Ø50/Ø70	20/17																
SAV-100DA	F07/F10	M8/M10	620	95	56	64	153	127	30	80	PF	1/4"	20	42	12	24	16	32
	Ø70/Ø102	24/22																
SAV-115DA	F07/F10	M8/M10	686	97	64.5	74.5	181	145	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	24/22																
SAV-125DA	F07/F10	M8/M10	718	97	69	78.5	193	157	30	80	PF	1/4"	30	62	12	24	16	32
	Ø70/Ø102	29/27																
SAV-145DA	F10/F12	M10/M12	760	115	80	87	214	178	30	80/130	PF	1/4"	30	62	12	24	16	32
	Ø102/Ø125	30/27																
SAV-160DA	F10/F12	M10/M12	826	118	89	104	236	200	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø102/Ø125	30/27																
SAV-190DA	F14	M16	892	130	103	103	267	231	30	80/130	PF	1/4"	30	80	12	24	16	32
	Ø140	40/36																



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