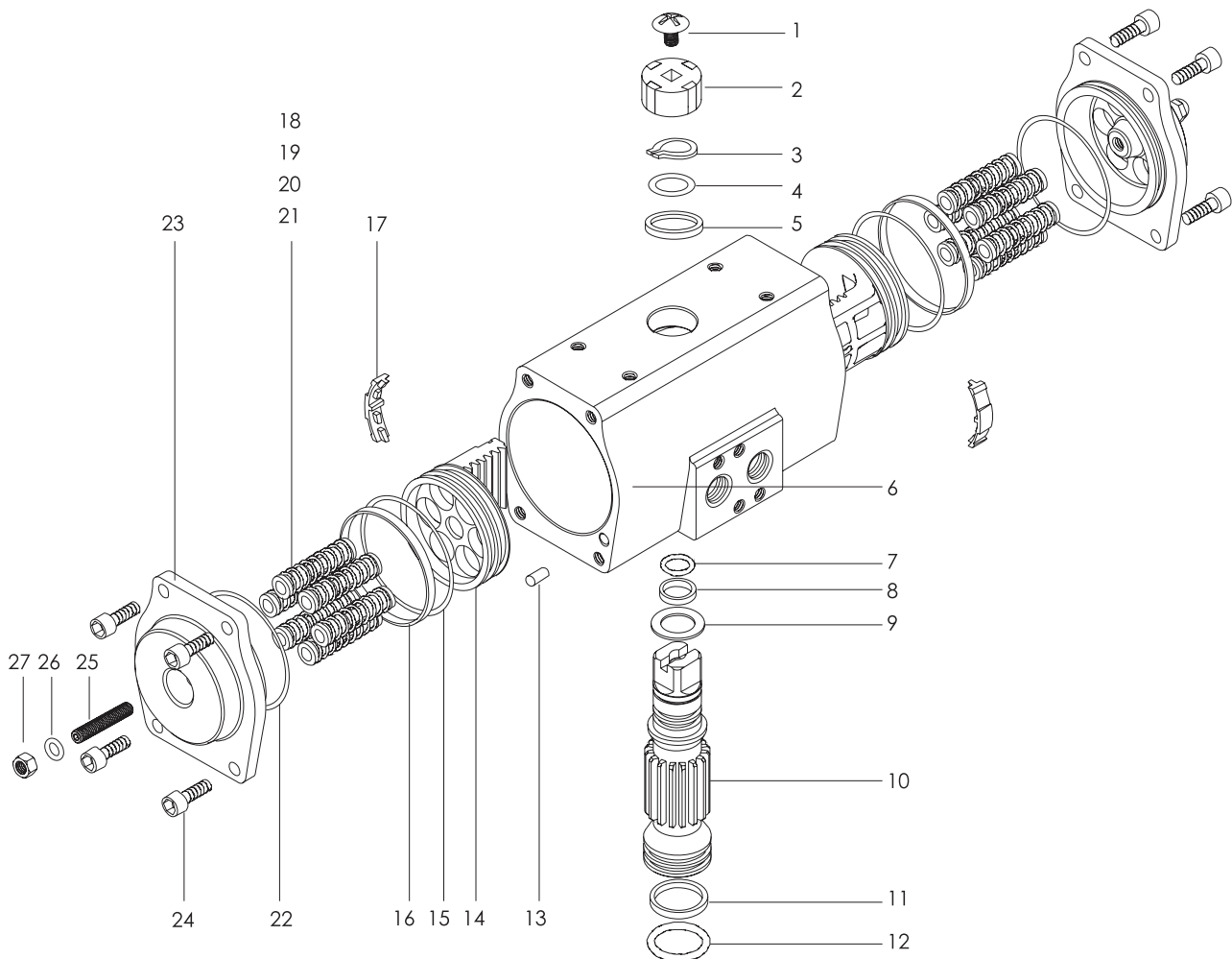


General Data

Torque Range	Double acting: From 15.1Nm@5bar to 1316Nm@5bar
	Spring return: From 2.9Nm@5bar to 863Nm@5bar
Operating media	Dry or lubricated air, or the non-corrosive gases.
	The maximum particle diameter must less than 30 μ m.
Air supply pressure	Working pressure: 2-8 Bar
	Maximum supply: 10 Bar
Operating temp.	Standard:-20°C ~+80°C
	Low temperature:-35°C ~+80°C
	High temperature:-15°C ~+150°C
Travel adjustment	$\pm 4^\circ$ for the rotation at 0° and 90°
Application	Indoor or Outdoor

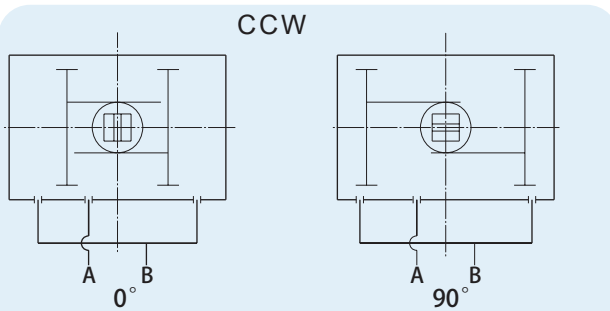
Part and Materials



No.	Part Name	Material	Qty
1	Indicator screw	Plastic	1
2	Indicator	Plastic	1
3	Circlip	Stainless steel	1
4	Thrust washer	Stainless steel	1
5	Outside washer	Polyoxymethylene	1
6	Body	Stainless steel	1
7	O-ring(Pinion top)	Viton/NBR	1
8	Bearing(Pinion top)	Polyoxymethylene	1
9	Inside washer	Polyoxymethylene	1
10	Pinion	Stainless steel	1
11	Bearing(Pinion bottom)	Polyoxymethylene	1
12	O-ring(Pinion bottom)	Viton/NBR	1
13	Plug	NBR	2
14	Piston	Stainless steel	2

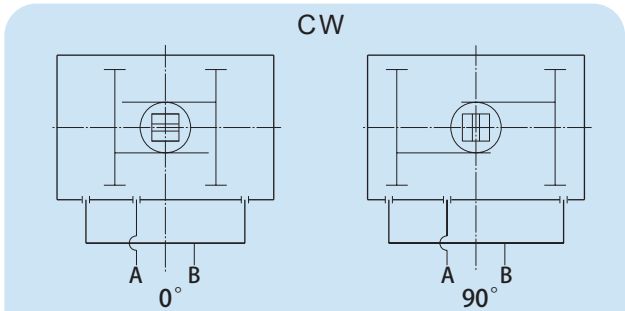
No.	Part Name	Material	Qty
15	O-ring(Piston)	Viton/NBR	2
16	Bearing(Piston)	Polyoxymethylene	2
17	Guide(Piston)	Nylon	2
18	Spring	Spring Steel	*
19	Spring Retainer(L)	Nylon	*
20	Spring Retainer(R)	Nylon	*
21	Retainer Connector	Brass	*
22	O-ring(End-Cap)	Viton/NBR	2
23	End-Cap	Stainless steel	2
24	End-Cap Screw	Stainless steel	8
25	Adjust Screw	Stainless steel	2
26	O-ring(Adjust Screw)	Stainless steel	2
27	Nut(Adjust Screw)	Viton/NBR	2

Double Acting Actuators



Air to port A forces the pistons outwards, causing the pinion to turn counterclockwise while the air is being exhausted from port B.

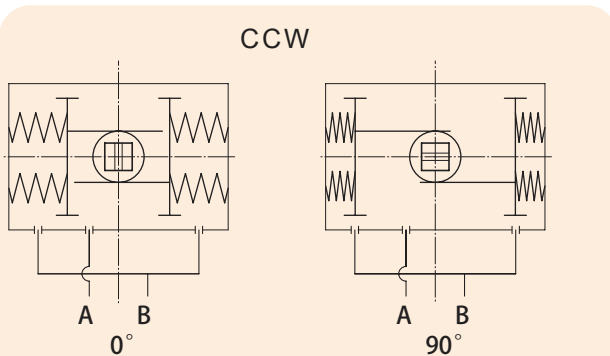
Air to port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from port A.



Air to port A forces the pistons outwards, causing the pinion to turn clockwise while the air is being exhausted from port B.

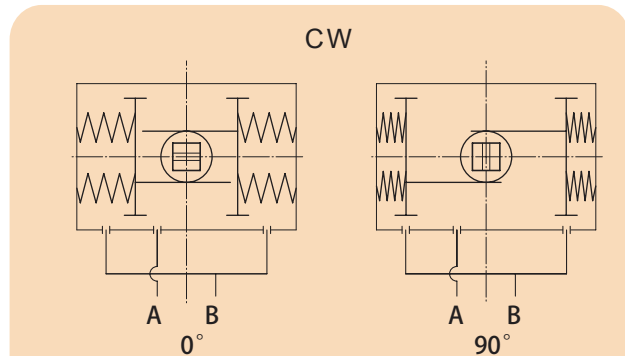
Air to port B forces the pistons inwards, causing the pinion to turn counterclockwise while the air is being exhausted from port A.

Spring Return Actuators



Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counterclockwise while air is being exhausted from port B.

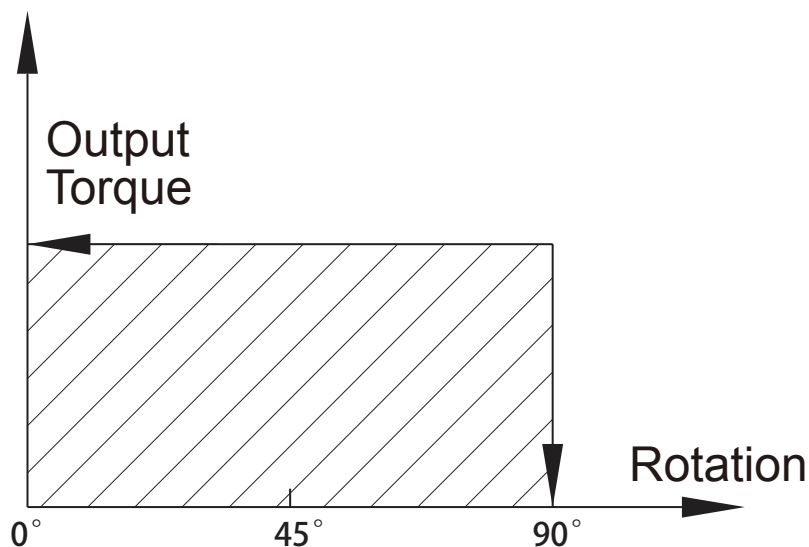
Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.



Air to port B forces the pistons outwards, causing the springs to compress. The pinion turns counterclockwise while air is being exhausted from port B.

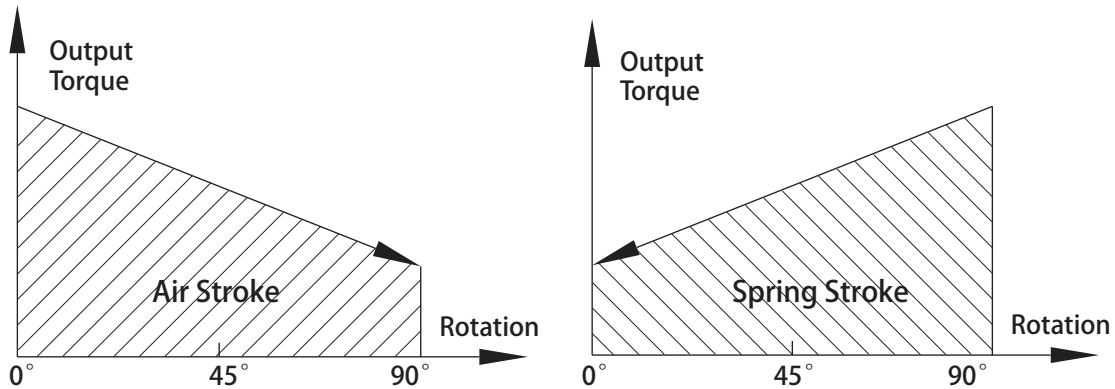
Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.

Output Torque of Double Acting Actuators

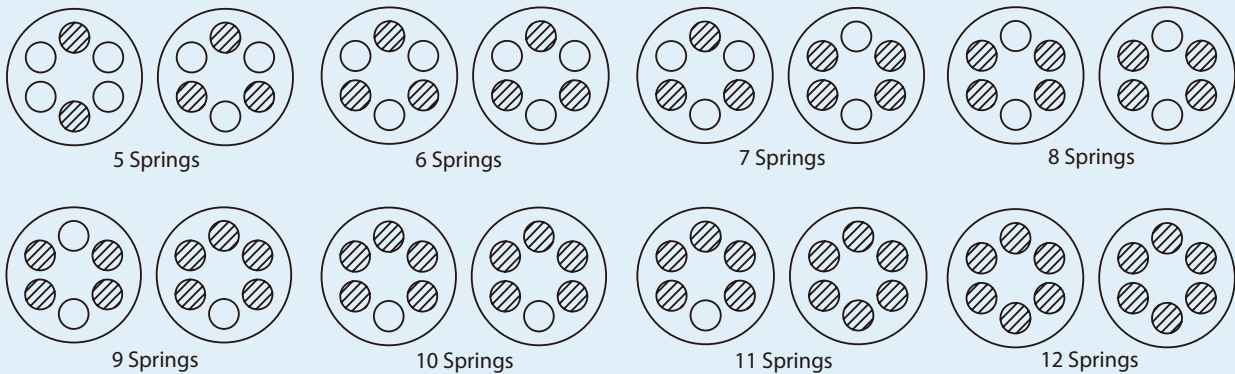


OUTPUT TORQUE OF DOUBLE ACTING ACTUATORS (Unit:Nm)										
Model	Air supply pressure (Bar)									
	2	2.5	3	4	4.5	5	5.5	6	7	8
45DA	6	7.6	9.1	12.1	13.6	15.1	16.6	18.1	21.1	24.2
60DA	14.2	17.8	21.3	28.4	32	35.5	39.1	42.6	49.7	56.8
85DA	30.8	38.5	46.2	61.6	69.4	77.1	84.8	92.5	107.9	123.3
105DA	65.8	82.2	98.7	131.6	148	164.4	180.9	197.3	230.2	263.1
125DA	103	128	154	205	231	256	282	308	359	410
140DA	175	219	263	351	395	439	482	526	614	702
160DA	267	334	401	535	601	668	735	802	935	1069
210DA	526	658	789	1052	1184	1316	1447	1579	1842	2105

Output Torque of Spring Return Actuators



Spring Mounting Form for Spring Return Actuators



Note:

Make sure that the torque to operate the valve is compatible with the actuator torque (it depends on both actuator type and air supply).

Please note that the requested torque depends not only on the valve, but also on the working conditions, etc.

Pneumatic Actuator A Series, Quarter-turn



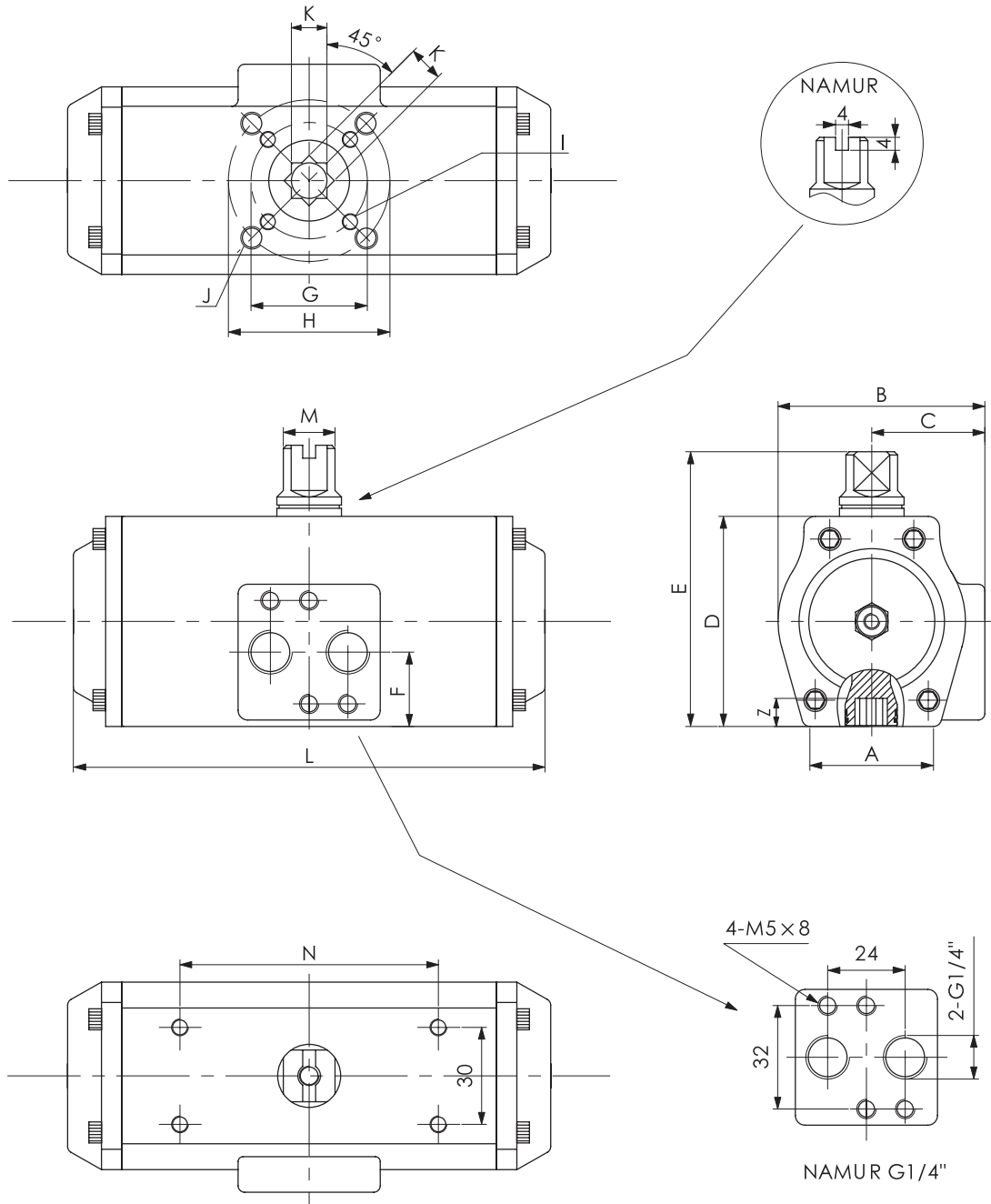
Output Torque of Spring Return Actuator (Unit:Nm)

Model	Spring Qty	Air supply pressure																Springs / output	
		2Bar		2.5Bar		3Bar		4Bar		5Bar		6Bar		7Bar		8Bar			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	Start	End
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
45SR	5	3	1.2	4.6	2.8													4.6	2.9
	6	2.3	0.2	3.9	1.8	5.4	3.3											5.5	3.5
	7			3.3	0.8	4.8	2.3	7.8	5.3									6.5	4.1
	8					4.2	1.3	7.2	4.3	10.2	7.3							7.4	4.6
	9							6.6	3.4	9.6	6.4	12.6	9.4					8.3	5.2
	10							6	2.4	9	5.4	12	8.4	15	11.4	18.1	14.5	9.2	5.8
	11									8.4	4.4	11.4	7.4	14.4	10.4	17.5	13.5	10.1	6.4
	12									7.8	3.5	10.8	6.5	13.8	9.5	16.9	12.6	11.1	7
60SR	5	7	3.2	10.6	6.8													10.4	6.8
	6	5.6	1	9.2	4.6	12.7	8.1											12.5	8.2
	7			7.7	2.4	11.2	5.9	18.3	13									14.6	9.6
	8					9.8	3.7	16.9	10.8	24	17.9							16.7	10.9
	9							15.4	8.6	22.5	15.7	29.6	22.8					18.8	12.3
	10							14	6.4	21.1	13.5	28.2	20.6	35.3	27.7	42.4	34.8	20.9	13.7
	11									19.7	11.3	26.8	18.4	33.9	25.5	41	32.6	22.9	15
	12									18.2	9.1	25.3	16.2	32.4	23.3	39.5	30.4	25	16.4
85SR	5	14.2	6.6	21.9	14.3													23	15.8
	6	10.8	1.7	18.5	9.4	26.2	17.1											27.6	19
	7			15.2	4.6	22.9	12.3	38.3	27.7									32.2	22.1
	8					19.6	7.4	35	22.8	50.5	38.3							36.8	25.3
	9							31.6	18	47.1	33.5	62.5	48.9					41.4	28.5
	10							28.3	13.2	43.8	28.7	59.2	44.1	74.6	59.5	90	74.9	46	31.6
	11									40.5	23.8	55.9	39.2	71.3	54.6	86.7	70	50.6	34.8
	12									37.1	19	52.5	34.4	67.9	49.8	83.3	65.2	55.2	38
105SR	5	32.5	14	48.9	30.4													49.2	31.6
	6	25.8	3.6	42.2	20	58.7	36.5											59.1	38
	7			35.6	9.7	52.1	26.2	85	59.1									68.9	44.3
	8					45.4	15.8	78.3	48.7	111	81.5							78.7	50.6
	9							71.7	38.4	105	71.2	137	104					88.6	56.9
	10							65	28	97.8	60.8	131	93.7	164	127	197	160	98.4	63.3
	11									91.1	50.4	124	83.3	157	116	190	149	108	69.6
	12									84.5	40.1	117	73	150	106	183	139	118	75.9

Output Torque of Spring Return Actuator (Unit:Nm)

Model	Spring Qty	Air supply pressure																Springs ' output	
		2Bar		2.5Bar		3Bar		4Bar		5Bar		6Bar		7Bar		8Bar			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	Start	End
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
125SR	5	47.9	20.5	72.9	45.5													78.4	52.4
	6	36.9	4	61.9	29	87.9	55											94.1	62.8
	7			50.8	12.5	76.8	38.5	128	89.5									110	73.3
	8					65.8	22	117	73	168	124							125	83.8
	9							106	56.5	157	108	209	160					141	94.2
	10							94.8	40	146	91	198	143	249	194	300	245	157	105
	11									135	74.5	187	127	238	178	289	229	172	115
	12									124	58	176	110	227	161	278	212	188	126
140SR	5	84.7	39.3	129	83.3													129	85.8
	6	66.6	12.1	111	56.1	155	100											155	103
	7			92.6	29	137	73	225	161									181	120
	8					119	45.8	207	134	295	222							206	137
	9							189	107	277	195	364	282					232	154
	10							170	79.5	258	168	345	255	433	343	521	431	258	172
	11									240	140	327	227	415	315	503	403	284	189
	12									222	113	309	200	397	288	485	376	310	206
160SR	5	120	47.7	187	115													208	140
	6	90.6	3.9	158	70.9	225	138											250	168
	7			128	27	195	94	329	228									292	196
	8					166	50.2	300	184	433	317							333	223
	9							270	140	403	273	537	407					375	251
	10							241	96.4	374	230	508	364	641	497	775	631	417	279
	11									345	186	479	320	612	453	746	587	458	307
	12									315	142	449	276	582	409	716	543	500	335
210SR	5	237	126	369	258													360	260
	6	179	46	311	178	442	309											432	313
	7			253	99	384	230	647	493									503	365
	8					326	150	589	413	853	677							575	417
	9							531	333	795	597	1058	860					647	469
	10							473	253	737	517	1000	780	1263	1043	1526	1306	719	521
	11									679	437	942	700	1205	963	1468	1226	791	573
	12									621	357	884	620	1147	883	1410	1146	863	625

Dimension



Model	A	B	C	D	E	F	G	H	I	J	K	L1	M	N	Z	Air Connection
45DA(SR)	48	70	41	65	85	23	Φ36	Φ50	M5x8	M6x10	11	148	16	80	14	Namur G1/4"
60DA(SR)	58	78	43	81	101	23		Φ50		M6x10	14	167	16	80	18	Namur G1/4"
85DA(SR)	75	102	53.5	108	128	24	Φ50	Φ70	M6x10	M8x13	17	197	16	80	21	Namur G1/4"
105DA(SR)	92	122	63.5	133	153	24		Φ70		M8x13	22	251	16	80	26	Namur G1/4"
125DA(SR)	96	140	72	155	185	28	Φ70	Φ102	M8x13	M10x16	22	284	22	130	26	Namur G1/4"
140DA(SR)	112	154	78	171.5	201.5	34	Φ102	Φ125	M10x16	M12x20	27	360	22	130	31	Namur G1/4"
160DA(SR)	127	173	86	197	227	39	Φ102	Φ125	M10x16	M12x20	27	420	22	130	31	Namur G1/4"
210DA(SR)	144	226	110	255	285	45		Φ140		M12x20	36	530	32	130	40	Namur G1/4"

Selection of Double Acting Actuators

Suggested safety factor on normal working conditions is 20%-30%.

Example:

Torque needed by valve=100N.m Safety factor (1+30%)=130N.m Air Supply=5Bar

Minimum model 105DA is selected according to the torque table.

Selection of Spring Return Actuators

Suggested safety factor on normal working conditions is 30%-50%.

Example:

Torque needed by valve=80N.m

Safety factor (1+30%)=104N.m

Air Supply=5Bar

Check the torque table of spring return actuators', the output torque of 140SR K8 is:

Air stroke 0°=294.5N.m Air stroke 90°=221.8N.m

Spring stroke 90°=137.3N.m Spring stroke 0°=206.3N.m

All the output torque is larger than needed.

Attention:

During the restoration, the spring return actuators' output torque will not be affected by the inputing air from the port B.

On the contrary, it will help the restoration of springs.

During selecting the spring return actuators, if we know the torque needed for the valve opening, operating and closing, we can select more reasonable and economical actuators.

Example:

Max. torque needed by the butterfly valve=104N.m

Torque needed to open valve (operate)104x30%=32N.m

Air Supply=5Bar

125SR K10 type is selected.

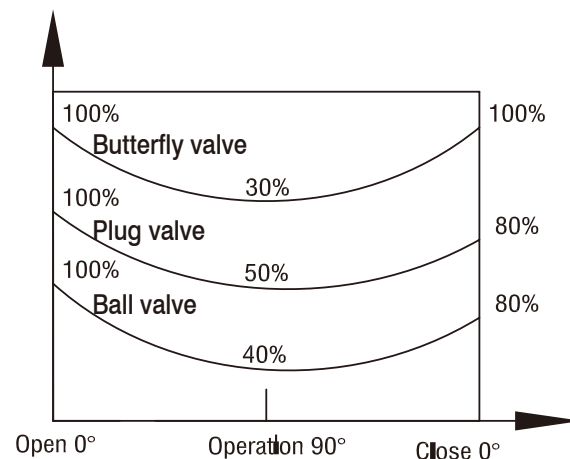
Output torque is:

Air stroke 0°=145.8N.m >104N.m

Air stroke 90°=91N.m >32N.m

Spring stroke 90°=156.8N.m >32N.m

Spring stroke 0°=104.7N.m >104N.m



The above datas show that the actuator's torque meet the requirement of the butterfly valve.

Air Consumption

Model	Air Volume (L)	
	Opening	Closing
45DA	0.08	0.11
63DA	0.2	0.23
85DA	0.41	0.55
105DA	0.94	1.18

Model	Air Volume (L)	
	Opening	Closing
125DA	1.47	1.85
140DA	2.43	3.2
160DA	3.65	5.03
210DA	7.4	9.7

Air consumption is decided by air supply, air volume and acting cycle times. Expressions:

$$L/\text{Min} = \text{Air volume}(\text{Air volume opening} + \text{Air volume closing}) \times \left[\frac{\text{Air Supply (Kpa)} + 101.3}{101.3} \right] \times \text{Acting cycle times}(/\text{min})$$

Weight Table

Model	Weight (kg)
45DA	2.51
63DA	3.85
85DA	6.35
105DA	11.9
125DA	18
140DA	24.8
160DA	35.8
210DA	91

Model	Weight (kg)
45SRK10	2.65
63SRK10	4.1
85SRK10	7
105SRK10	12.6
125SRK10	19.2
140SRK10	27.3
160SRK10	37.6
210SRK10	100

How to Order

1 Series	2 Model	3 Acting Type	4 Body	5 Seals	6 Color	7 Travel Angle
A	45	DA: Double Acting	4: SUS304	N: NBR	G: SUS COLOR	G: 90°
	60	SR: Spring Return	6: SUS316	V: VITON	B: Buyer's	
	85	K5: 5pcs Spring	L: SUS316L			
	...	K6: 6pcs Spring				
	210	...				
		K12: 12pcs Spring				

Example

A-125-SR-K12-6-V-B-G

Series	Model	Acting Type	Body	Seals	Color	Travel Angle
A	125	Spring Return	SUS316	VITON	Buyer's	90°