

SPA-R Pneumatic Actuators are suitable for easy, modular installation onto process control components such as Butterfly Valves, Cylindrical Plug Valves, Ball Valves or as operating device applied on automated Reactor Sampling Systems.

## Modular Design

Actuators are available as double-acting or single-acting with spring return (fail safe close or fail safe open). Upon request, the actuators can be mounted onto valves as complete units, i.e. with solenoid valve, limit switch box or electro-pneumatic positioner, incl. all required mounting parts.



**Standard Actuator**  
with visual position indicator

## Main Features

- Robust design, body/cover made of cast aluminum, reliable function by proven rack and pinion construction  
Option: actuators with stainless steel bodies
- Smooth surface finish of the cylinder bore (Ra 0.4-0.6 microns) for increased life span of actuator
- Excellent corrosion protection of the actuator, resistant to salt spray for up to 500 hours
- Easy replaceable guide pads made of materials with low coefficient of friction
- Actuators with at least two bolt circles acc. to ISO 5211 for direct mounting onto valves
- NAMUR interface for easy installation of limit switch boxes and solenoid pilot valves
- Visual position indicator as integrated standard item
- Special actuators, for extreme temperatures and any environmental conditions, upon specified request

**Conformity acc. to European Machinery Directive 98/37/EC**

## Options



**Actuator Unit On-Off**  
with limit switch box and solenoid valve



**Actuator Control Unit**  
with E/P positioner

### Operating Data

- Air Supply filtered air (dry or lubricated)
- Air Pressure min. 14.2 psi up to 116 psi
- Torque Range 20 up to 88'720 in-lbs at 87 psi air pressure
- Operating Angle 90°
- Stroke Adjustment  $\pm 5^\circ$
- Lubrication permanent lubrication (for min. 1 million cycles)
- Temp. Range -4°F bis +176°F
- Installation Pos. user-defined

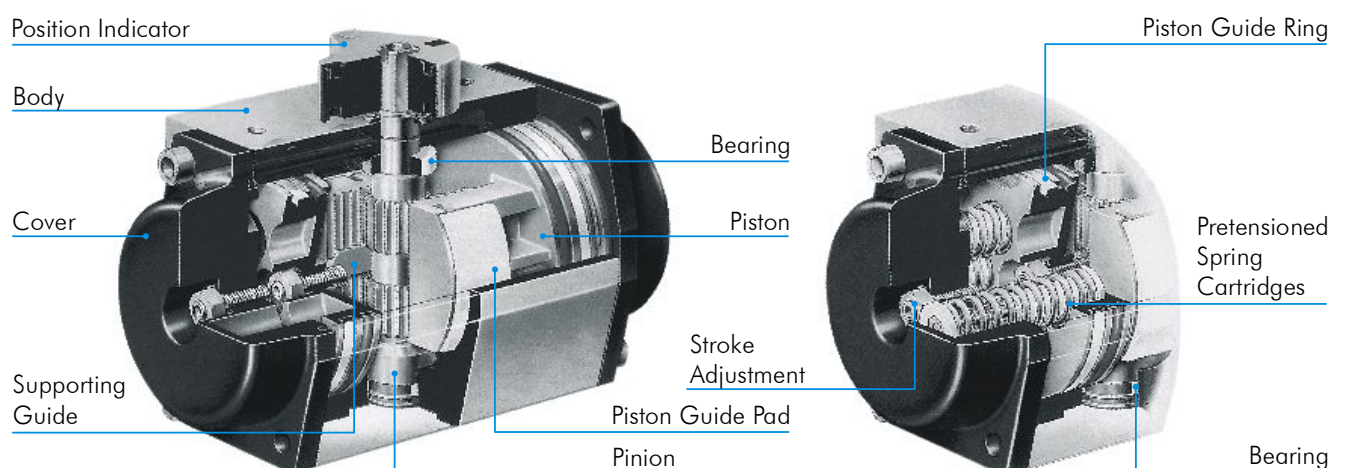
### Testing

- 100% function- and tightness testing on electronic testing bench guarantees the reliable function of the pneumatic actuators

### Technical Data

TR Type		050	063	075	085	100	115	125	160	200	270	330	420
Air Volume (in <sup>3</sup> )	DA	14.0	27.5	37.2	59.8	109.8	170.9	225.8	488.2	866.5	1,964.8	3,832.1	7,993.6
	SR	-	-	-	-	-	-	-	-	-	-	-	-
Opening Time (sec)	DA	0.6	0.6	0.6	0.6	0.8	0.9	1.1	1.3	3.6	4.5	5.0	8.0
	SR	0.6	0.7	0.7	0.7	1.1	1.2	1.3	2.1	4.6	6.0	6.5	10.0
Closing Time (sec)	DA	0.6	0.7	0.7	0.9	0.9	1.1	1.1	1.6	4.6	4.5	5.0	9.0
	SR	0.6	0.9	1.0	1.3	1.3	1.6	2.1	2.6	6.1	6.0	6.5	11.0
Weight (lbs)	DA	2.4	3.5	6.4	9.2	12.8	20.2	26.2	45.1	94.6	206.8	231.0	462.0
	SR	2.6	4.0	7.4	10.6	15.0	22.7	31.2	54.8	116.6	248.6	318.1	613.8

### Construction of Actuator

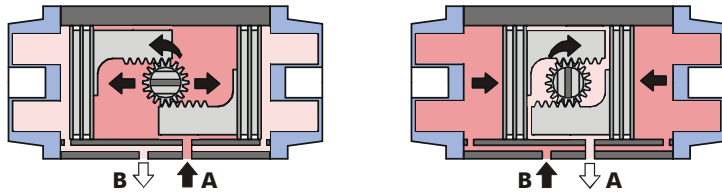


### Assembly

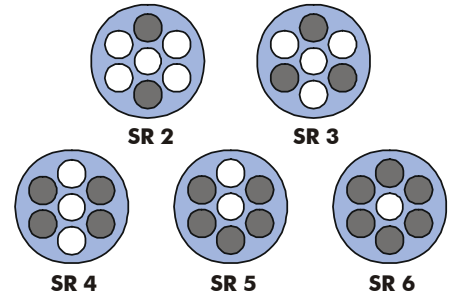
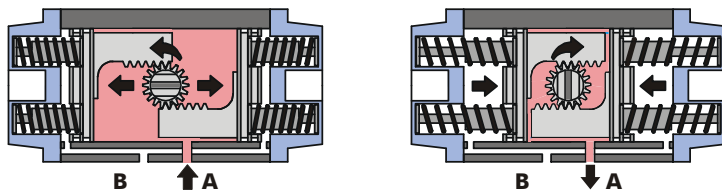
of compl. actuators incl. options and accessories  
acc. to data sheet  
Mounting Options (see specification)

**Modes of Operation**

**DA: double-acting**



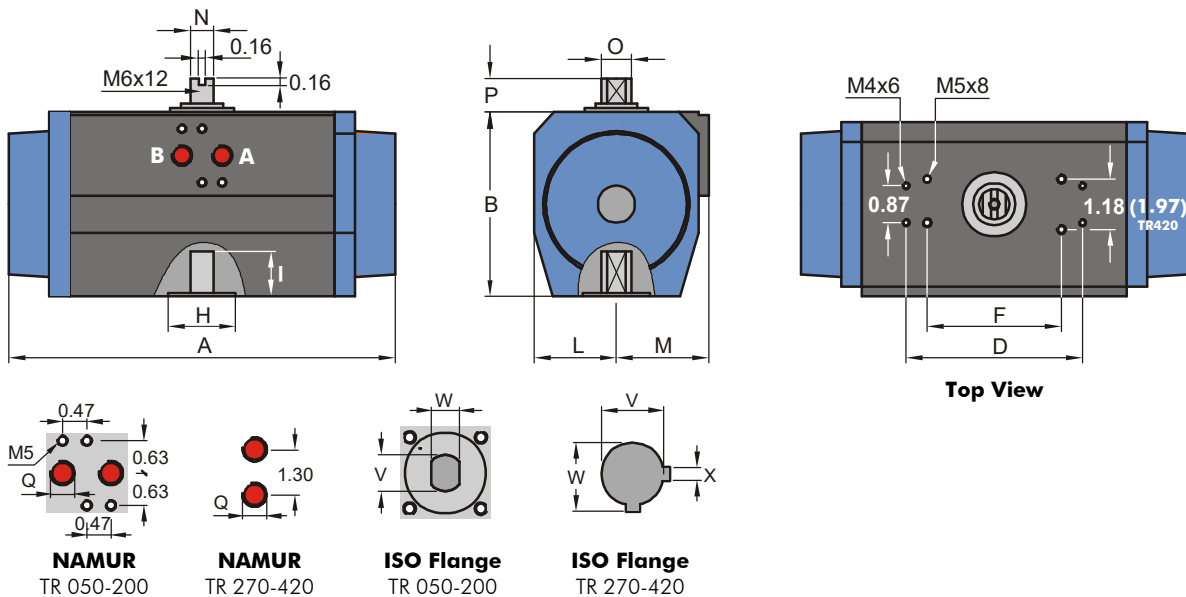
**SR: single-acting**



**Arrangement of Spring Cartridges**

- Do **not** open actuator under pressure!
- Spring cartridges release automatically during removal of covers!

**Dimensions** inch



TR Type	A	B	D	F	H	I	L	M	N	O	ISO	P	Q	V	W	X
<b>050</b>	5.43	2.64	-	3.15	0.98	0.51	1.32	1.63	0.31	0.47	F03/05	0.79	1/8"	0.56	0.43	-
<b>063</b>	5.98	3.27	-	3.15	0.98	0.63	1.50	1.89	0.31	0.47	F03/05	0.79	1/4"	0.56	0.43	-
<b>075</b>	8.07	3.94	4.13	3.15	1.38	0.81	1.67	2.03	0.55	0.71	F05/07	0.79	1/4"	0.72	0.55	-
<b>085</b>	8.98	4.33	4.13	3.15	1.57	0.93	1.93	2.17	0.55	0.71	F05/07	0.79	1/4"	0.72	0.55	-
<b>100</b>	10.79	4.92	4.13	3.15	2.17	1.12	2.17	2.56	0.55	0.71	F05-10	0.79	1/4"	0.95	0.67	-
<b>115</b>	12.13	5.59	5.47	5.12	2.17	1.12	2.52	2.68	1.06	1.42	F07/10	1.18	1/4"	0.95	0.67	-
<b>125</b>	14.25	6.10	5.47	5.12	2.17	1.61	2.74	2.81	1.06	1.42	F07/10	1.18	1/4"	1.19	0.87	-
<b>160</b>	18.19	7.72	5.47	5.12	2.95	2.01	3.46	3.46	1.06	1.42	F10/12	1.97	1/4"	1.58	1.06	-
<b>200</b>	22.64	9.45	5.47	5.12	3.35	2.01	4.33	4.33	1.26	1.65	F10/12	1.97	1/4"	1.58	1.06	-
<b>270</b>	26.97	13.07	-	5.12	4.09	2.44	6.54	6.54	2.17	3.15	F14	1.97	1/2"	1.97	2.12	0.55
<b>330</b>	33.46	16.30	-	5.12	5.12	3.31	7.48	8.27	2.17	3.15	F16	1.97	1/2"	2.36	2.54	0.71
<b>420</b>	36.77	21.02	-	7.87	7.87	3.70	9.80	10.71	2.17	3.15	F25	3.15	1/2"	2.76	2.95	0.79

**DA: double-acting** Torque values in in-lbs

Type TR	Air Supply in psi									
	14.5	29	43	58	72	87	101	116	131	145
050	27	54	81	109	136	164	190	218	245	273
063	49	97	146	195	243	292	341	389	438	487
075	104	207	311	414	518	621	725	828	932	1,035
085	158	315	473	630	788	946	1,104	1,260	1,419	1,576
100	245	490	789	981	1,227	1,473	1,718	1,963	2,208	2,454
115	404	810	1,214	1,620	2,024	2,429	2,834	3,239	3,644	4,049
125	532	1,065	1,597	2,130	2,663	3,196	3,728	4,260	4,793	5,326
160	1,047	2,095	3,142	4,190	5,237	6,284	7,331	8,379	9,426	10,474
200	1,963	3,927	5,891	7,854	9,818	11,800	13,745	15,709	17,673	19,636
270	4,772	9,544	14,316	19,088	23,860	28,632	33,403	38,175	42,947	47,719
330	8,067	16,134	24,196	32,267	40,338	48,401	60,490	64,534	72,605	80,668
420	14,788	29,577	44,365	59,153	73,933	88,721	103,510	118,298	-	-

**SR: single-acting** Torque values in in-lbs

Type TR	Spring Contr./side	Air Supply in psi												Spring Torque	
		43		58		72		87		101		116		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
050	3	50	31	79	58	106	85	134	112	160	139	188	166	50	31
	4			68	42	96	68	123	96	150	122	177	150	68	42
	5					85	51	112	79	139	105	166	133	85	51
	6					74	35	102	62	128	89	156	116	102	62
063	3	83	56	132	104	181	152	229	201	278	250	327	298	90	64
	4			109	73	158	122	206	171	255	219	304	268	121	86
	5					136	92	185	141	234	189	282	238	151	107
	6					115	62	164	111	212	159	261	208	181	128
075	3	199	112	303	216	407	319	511	423	614	527	718	630	199	112
	4			266	150	370	253	473	357	577	460	681	564	266	150
	5					333	187	436	290	540	394	643	497	333	187
	6					296	120	399	224	503	327	606	431	399	224
085	3	305	167	464	325	621	482	779	640	936	797	1,094	955	305	167
	4			408	223	566	381	723	538	881	696	1,038	853	408	223
	5					510	279	667	436	825	594	982	751	510	279
	6					456	177	612	335	769	492	927	650	612	335
100	3	471	266	716	511	962	756	1,207	1,001	1,452	1,246	1,697	1,491	471	266
	4			627	354	873	599	1,119	844	1,364	1,089	1,609	1,335	627	354
	5					785	443	1,030	688	1,275	933	1,520	1,178	785	443
	6					696	285	942	531	1,187	776	1,432	1,021	942	531
115	3	746	469	1,151	874	1,556	1,279	1,961	1,684	2,366	2,089	2,770	2,493	746	469
	4			994	626	1,399	1,030	1,805	1,435	2,209	1,840	2,613	2,244	994	626
	5					1,243	781	1,648	1,187	2,052	1,591	2,457	1,996	1,243	781
	6					1,086	533	1,491	938	1,896	1,343	2,300	1,747	1,491	938
125	3	1,034	564	1,566	1,097	2,100	1,629	2,633	2,161	3,165	2,693	3,697	3,225	1,034	564
	4			1,378	752	1,912	1,285	2,444	1,817	2,976	2,349	3,508	2,881	1,378	752
	5					1,723	941	2,256	1,473	2,788	2,005	3,320	2,536	1,723	941
	6					1,535	656	2,067	1,128	2,599	1,660	3,131	2,192	2,067	1,128

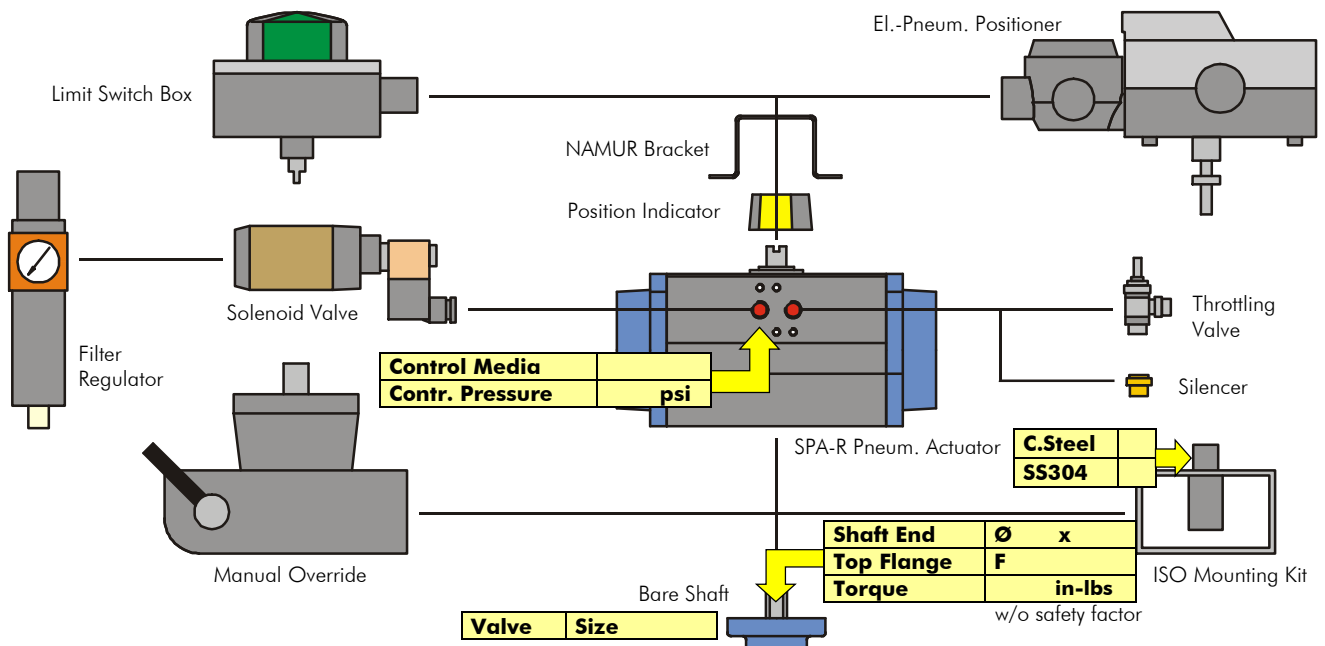
**SR: single-acting** Torque values in in-lbs

Type TR	Spring Carr./side	Air Supply in psi												Spring Torque	
		43		58		72		87		101		116		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
160	3	1,968	1,174	3,015	2,221	4,063	3,268	5,110	4,315	6,157	5,362	7,204	6,409	1,968	1,174
	4			2,624	1,566	3,672	2,613	4,719	3,659	5,766	4,706	6,813	5,753	2,624	1,566
	5					3,281	1,957	4,328	3,004	5,375	4,051	6,422	5,098	3,281	1,957
	6					2,890	1,301	3,936	2,348	4,983	3,395	6,030	4,442	3,936	2,348
200	3	3,749	2,142	5,706	4,105	7,676	6,069	9,638	8,033	11,602	10,001	13,567	11,956	3,749	2,142
	4			4,998	2,855	6,962	4,820	8,921	6,784	10,886	8,747	12,850	10,700	4,998	2,855
	5					6,248	3,570	8,212	5,534	10,178	7,498	12,142	9,452	6,248	3,570
	6					5,534	2,320	7,498	4,284	9,461	6,248	11,425	8,204	7,498	4,284
270	3	8,076	6,240	12,848	11,012	17,619	15,784	22,391	20,556	27,163	25,328	31,935	30,100	8,076	6,240
	4			10,768	8,321	15,540	13,093	20,312	17,865	25,084	22,637	29,855	27,408	10,767	8,320
	5					13,460	10,403	18,232	15,172	23,004	18,978	27,776	24,716	13,459	10,400
	6					11,379	77,08	16,151	12,480	20,923	17,289	25,695	22,024	16,151	12,480
330	3	14,395	9,810	22,463	17,878	30,540	25,946	38,599	34,014	46,667	42,083	54,735	50,151	14,395	9,810
	4			19,189	13,074	27,258	21,143	35,335	29,219	43,394	37,279	51,463	45,347	19,189	13,074
	5					23,994	16,347	32,062	24,424	40,130	32,483	48,189	40,552	23,994	16,347
	6					20,721	11,552	28,789	19,620	36,866	27,688	44,925	35,757	28,789	19,620
420	3	26,541	17,824	41,330	32,612	56,109	47,401	70,897	62,180	85,686	76,968	100,474	91,757	26,546	17,828
	4			35,382	23,762	50,171	38,551	64,959	53,339	79,747	68,127	94,536	82,916	35,385	23,765
	5					44,232	29,701	59,021	44,489	73,809	59,277	88,589	74,066	44,234	29,701
	6					38,294	20,859	53,073	35,648	67,862	50,427	82,650	65,216	53,073	35,656

 Values in column 0° indicate the maximum available starting torque by means of air supply through connection **A**.

Values in column 90° indicate the minimum available end torque if air supply fails.

**Mounting Options**



<b>Project-/Customer Data</b>	Inquiry/Date:	<b>Ref. SF</b>
Company:	Contact Person:	Phone:
Address:	Function:	Fax:
ZIP/Place:	Department:	E-mail:

Cycle Time	Limit Switch Box	Pilot Valve	Positioner	Ex Class
Min. ___ sec	<input type="checkbox"/> 1 Switch	<input type="checkbox"/> zero-current OFF Type: _____	<input type="checkbox"/> 4 – 20 mA	required
Max. ___ sec	<input type="checkbox"/> 2 Switches	<input type="checkbox"/> zero-current ON Voltage _____	<input type="checkbox"/> 2.9 – 14.5 psi	_____

**Specification of a complete Quarter Turn Actuator SPA-R Series**

Type      Spring Cartridges

**SPA-R** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Mode of Operation	
<b>DA</b>	double-acting
<b>FC</b>	single-acting (spring to close)
<b>FO</b>	single-acting (spring to open)

Actuator Options			
<b>LS</b>	Limit Switch Box (Micro)	<b>EP</b>	El.-Pneum. Positioner
<b>LSe</b>	Limit Switch Box (Micro Ex)	<b>EPe</b>	El.-Pneum. Positioner Ex
<b>PS</b>	Limit Switch Box (Proximity)	<b>PP</b>	Pneum. Positioner
<b>PSe</b>	Limit Switch Box (Proximity Ex)		

Accessories	
<b>Na</b>	NAMUR Bracket or Mounting Kit
<b>SV3</b>	Solenoid Valve 3/2-Way
<b>SV3e</b>	Solenoid Valve 3/2-Way Ex
<b>SV5</b>	Solenoid Valve 5/2-3/2-Way
<b>SV5e</b>	Solenoid Valve 5/2-3/2-Way Ex
<b>Hh</b>	Stroke Limiter/Manual Override
<b>Ad</b>	Adapter (comb. with el. pos. indicator)
<b>Vs</b>	Piping Stainless Steel
<b>Dr</b>	Throttling Valve
<b>Sc</b>	Silencer
<b>Fr</b>	Filter Regulator incl. Pressure Gauge
<b>Ia</b>	ISO Mounting Kit