

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. 1 bar (14.2 psi) up to 8 bar (116 psi)
- Torque Range 20 up to 10'025 Nm (88'720 in-lbs) at 6 bar (87 psi) air pressure
- Operating Angle 90°
- Stroke Adjustment ±5°
- Lubrication permanent lubrication (for min. 1 million cycles)
- Temp. Range -20°C bis +80°C
- Installation Pos. user-defined

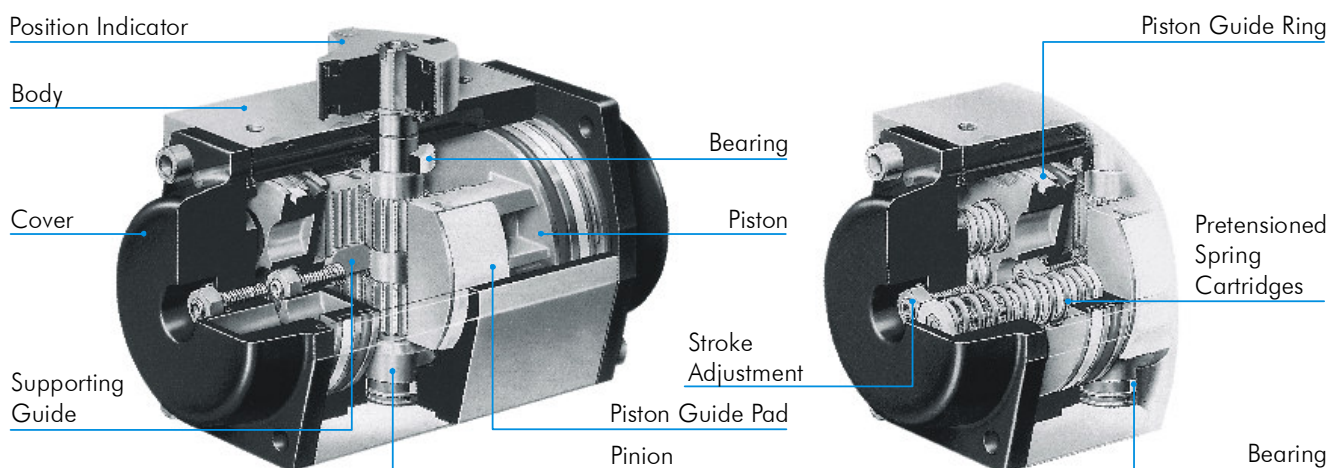
**Testing**

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

**Technical Data** (lbs = kg x 2.2)

TR Type		050	063	075	085	100	115	125	160	200	270	330	420
Air Volume (dm <sup>3</sup> )	DA	0.23	0.45	0.61	0.98	1.8	2.8	3.7	8.0	14.2	32.2	62.8	131.0
	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 (kg)	DA	1.07	1.6	2.9	4.2	5.8	9.2	11.9	20.5	43.0	94.0	105.0	210
	SR	1.2	1.8	3.37	4.83	6.82	10.3	14.2	24.9	53.0	113.0	144.6	279

**Construction of Actuator**

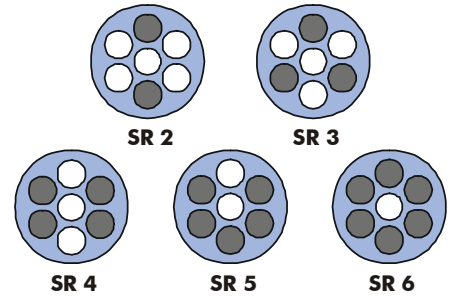
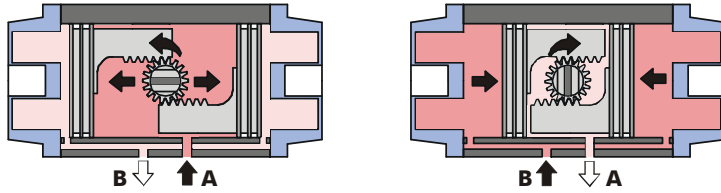


**Assembly**

of compl. actuators incl. options and accessories  
 acc. to data sheet  
 Mounting Options, Specification

Modes of Operation

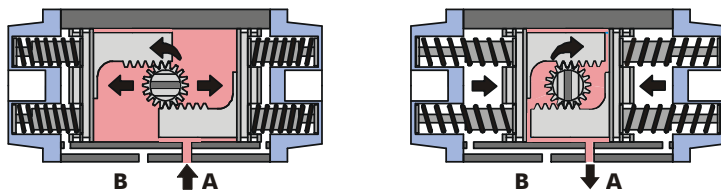
DA: double-acting



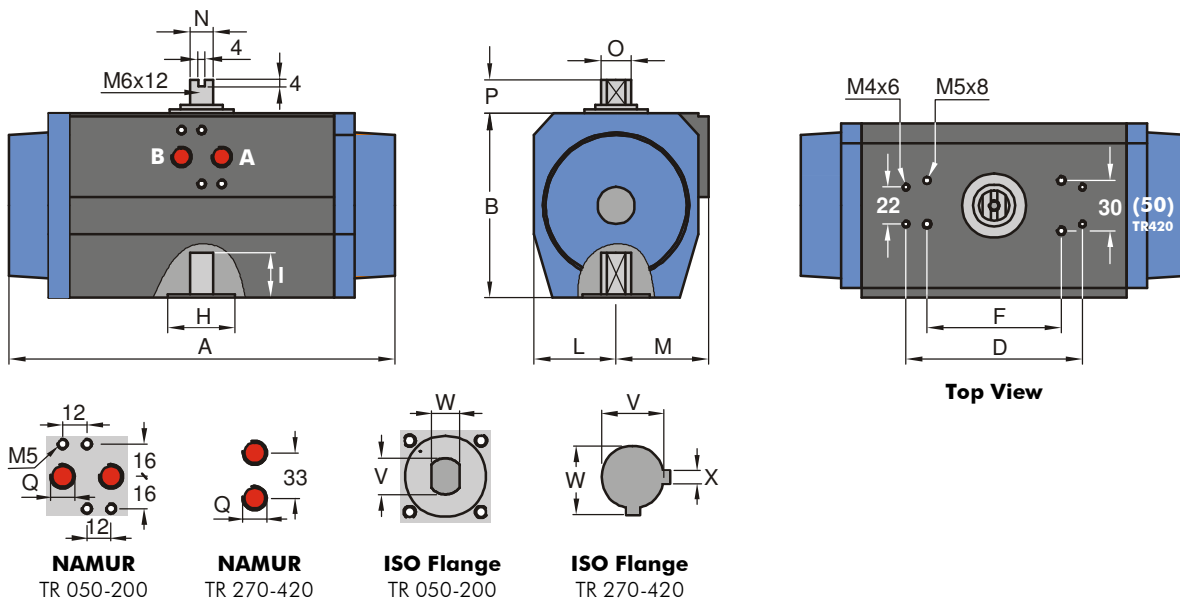
Arrangement of Spring Cartridges

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

SR: single-acting



Dimensions in mm



TR Type	A	B	D	F	H	I	L	M	N	O	ISO	P	Q	V	W	X
050	138	67	-	80	25	13	33.5	41.5	8	12	F03/05	20	1/8"	14.2	11	-
063	152	83	-	80	25	16	38	48	8	12	F03/05	20	1/4"	14.2	11	-
075	205	100	105	80	35	20.5	42.5	51.5	14	18	F05/07	20	1/4"	18.2	14	-
085	228	110	105	80	40	23.5	49	55	14	18	F05/07	20	1/4"	18.2	14	-
100	274	125	105	80	55	28.5	55	65	14	18	F05-10	20	1/4"	24.2	17	-
115	308	142	139	130	55	28.5	64	68	27	36	F07/10	30	1/4"	24.2	17	-
125	362	155	139	130	55	41	69.5	71.5	27	36	F07/10	30	1/4"	30.2	22	-
160	462	196	139	130	75	51	88	88	27	36	F10/12	50	1/4"	40.2	27	-
200	575	240	139	130	85	51	110	110	32	42	F10/12	50	1/4"	40.2	27	-
270	685	332	-	130	104	62	166	166	55	80	F14	50	1/2"	50	53.8	14
330	850	414	-	130	130	84	190	210	55	80	F16	50	1/2"	60	64.4	18
420	934	534	-	200	200	94	249	272	55	80	F25	80	1/2"	70	74.9	20

**DA: double-acting** Torque values in Nm (in-lbs = Nm x 8.86) (psi = bar/0.0689)

Type TR	Air Supply in bar									
	1	2	3	4	5	6	7	8	9	10
050	3.0	6.1	9.2	12.3	15.4	18.5	21.5	24.6	27.7	30.8
063	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5	55.0
075	11.7	23.4	35.1	46.8	58.5	70.2	81.9	93.6	105.3	117.0
085	17.8	35.6	53.4	71.2	89.0	106.9	124.7	142.4	160.3	178.1
100	27.7	55.4	89.2	110.9	138.6	166.4	194.1	221.8	249.5	277.3
115	45.7	91.5	137.2	183.0	228.7	274.5	320.2	366.0	411.7	457.5
125	60.1	120.3	180.5	240.7	300.9	361.1	421.2	481.4	541.6	601.8
160	118.3	236.7	355.0	473.4	591.7	710.1	828.4	946.8	1'065.1	1'183.5
200	221.8	443.7	665.6	887.5	1'109.4	1'333.3	1'553.1	1'775.0	1'996.9	2'218.8
270	539.2	1'078.4	1'617.6	2'156.8	2'696.0	3'235.2	3'774.4	4'313.6	4'852.8	5'392.0
330	911.5	1'823.0	2'734.0	3'646.0	4'558.0	5'469.0	6'385.0	7'292.0	8'204.0	9'115.0
420	1'671	3'342	5'013	6'684	8'354	10'025	11'696	13'367	-	-

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

Type TR	Spring Cartr./ Side	Air Supply in bar												Spring Torque	
		3		4		5		6		7		8		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
050	3	5.7	3.5	8.9	6.6	12.0	9.6	15.1	12.7	18.1	15.7	21.2	18.8	5.7	3.5
	4			7.7	4.7	10.8	7.7	13.9	10.8	16.9	13.8	20.0	16.9	7.7	4.7
	5					9.6	5.8	12.7	8.9	15.7	11.9	18.8	15.0	9.6	5.8
	6					8.4	3.9	11.5	7.0	14.5	10.0	17.6	13.1	11.5	7.0
063	3	9.4	6.3	14.9	11.7	20.4	17.2	25.9	22.7	31.4	28.2	36.9	33.7	10.2	7.2
	4			12.3	8.3	17.8	13.8	23.3	19.3	28.8	24.8	34.3	30.3	13.7	9.7
	5					15.4	10.4	20.9	15.9	26.4	21.4	31.9	26.9	17.1	12.1
	6					13.0	7.0	18.5	12.5	24.0	18.0	29.5	23.5	20.5	14.5
075	3	22.5	12.6	34.2	24.4	46.0	36.1	57.7	47.8	69.4	59.5	81.1	71.2	22.5	12.6
	4			30.0	16.9	41.8	28.6	53.5	40.3	65.2	52.0	76.9	63.7	30.0	16.9
	5					37.6	21.1	49.3	32.8	61.0	44.5	72.7	56.2	37.6	21.1
	6					33.4	13.6	45.1	25.3	56.8	37.0	68.5	48.7	45.1	25.3
085	3	34.5	18.9	52.4	36.7	70.2	54.5	88.0	72.3	105.8	90.1	123.6	107.9	34.5	18.9
	4			46.1	25.2	63.9	43.0	81.7	60.8	99.5	78.6	117.3	96.4	46.1	25.2
	5					57.6	31.5	75.4	49.3	93.2	67.1	111.0	84.9	57.6	31.5
	6					51.5	20.0	69.1	37.8	86.9	55.6	104.7	73.4	69.1	37.8
100	3	53.2	30.0	80.9	57.7	108.7	85.4	136.4	113.1	164.1	140.8	191.8	168.5	53.2	30.0
	4			70.9	40.0	98.7	67.7	126.4	95.4	154.1	123.1	181.8	150.8	70.9	40.0
	5					88.7	50.0	116.4	77.7	144.1	105.4	171.8	133.1	88.7	50.0
	6					78.7	32.2	106.4	60.0	134.1	87.7	161.8	115.4	106.4	60.0
115	3	84.3	53.0	130.0	98.8	175.8	144.5	221.6	190.3	267.3	236.0	313.0	281.7	84.3	53.0
	4			112.3	70.7	158.1	116.4	203.9	162.2	249.6	207.9	295.3	253.6	112.3	70.7
	5					140.4	88.3	186.2	134.1	231.9	179.8	277.6	225.5	140.4	88.3
	6					122.7	60.2	168.5	106.0	214.2	151.7	259.9	197.4	168.5	106.0
125	3	116.8	63.7	177.0	123.9	237.3	184.1	297.5	244.2	357.6	304.3	417.7	364.4	116.8	63.7
	4			155.7	85.0	216.0	145.2	276.2	205.3	336.3	265.4	396.4	325.5	155.7	85.0
	5					194.7	106.3	254.9	166.4	315.0	226.5	375.1	286.6	194.7	106.3
	6					173.4	74.1	233.6	127.5	293.7	187.6	353.8	247.7	233.6	127.5

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

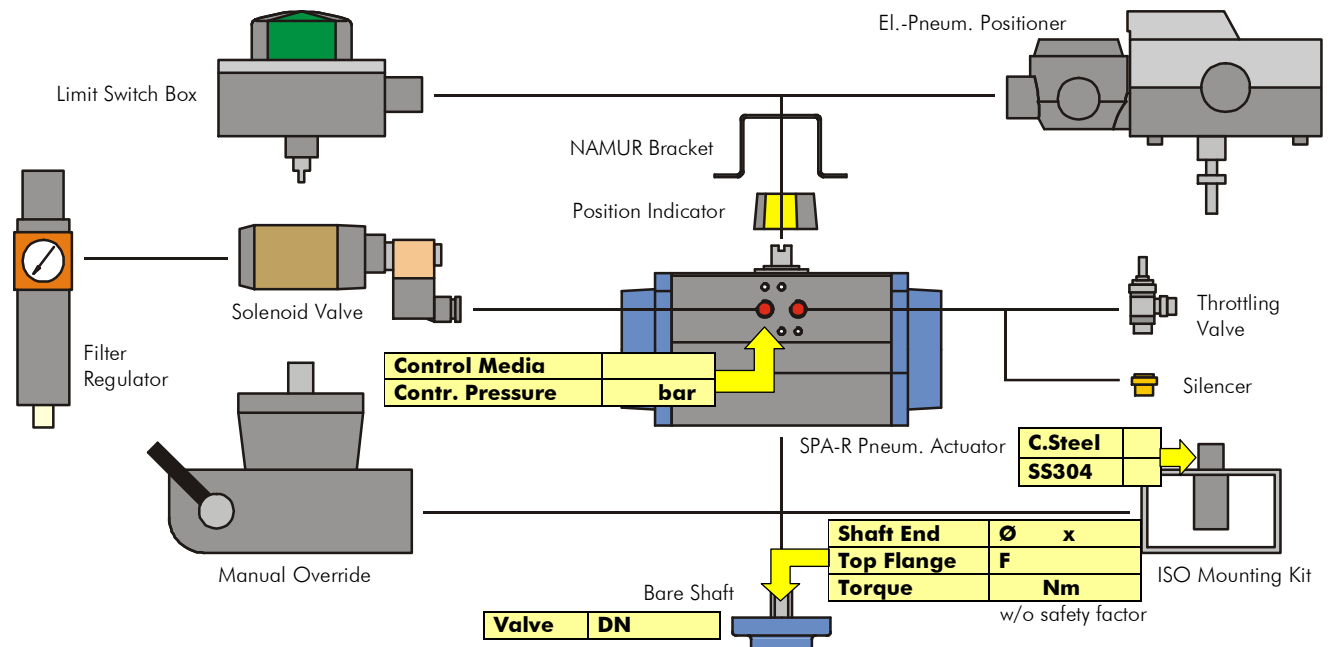
Type <b>TR</b>	Spring Cartr./ Side	Air Supply in bar												Spring Torque	
		<b>3</b>		<b>4</b>		<b>5</b>		<b>6</b>		<b>7</b>		<b>8</b>		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
<b>160</b>	3	222.4	132.6	340.7	251.0	459.1	369.3	577.4	487.6	695.7	605.9	814.0	724.2	222.4	132.6
	4			296.5	176.9	414.9	295.2	533.2	413.5	651.5	531.8	769.8	650.1	296.5	176.9
	5					370.7	221.1	489.0	339.4	607.3	457.7	725.6	576.0	370.7	221.1
	6					326.5	147.0	444.8	265.3	563.1	383.6	681.4	501.9	444.8	265.3
<b>200</b>	3	423.6	242.0	644.7	463.8	867.4	685.8	1089.0	907.7	1311.0	1130.0	1533.0	1351.0	423.6	242.0
	4			564.8	322.6	786.7	544.6	1008.0	766.5	1230.0	988.4	1452.0	1209.0	564.8	322.6
	5					706.0	403.4	927.9	625.3	1150.0	847.2	1372.0	1068.0	706.0	403.4
	6					625.3	262.2	847.2	484.1	1069.0	706.0	1291.0	927.0	847.2	484.1
<b>270</b>	3	912.5	705.1	1451.7	1244.3	1990.9	1783.5	2530.1	2322.7	3069.3	2861.9	3608.5	3401.1	912.5	705.1
	4			1216.7	940.2	1755.9	1479.4	2295.1	2018.6	2834.3	2557.8	3373.5	3097.0	1216.6	940.1
	5					1520.9	1175.5	2060.1	1714.4	2599.3	2144.4	3138.5	2792.8	1520.8	1175.1
	6					1285.8	871.0	1825.0	1410.2	2364.2	1953.6	2903.4	2488.6	1825.0	1410.2
<b>330</b>	3	1626.5	1108.5	2538.2	2020.1	3450.8	2931.8	4361.5	3843.4	5273.1	4755.1	6184.8	5666.8	1626.5	1108.5
	4			2168.3	1477.3	3080.0	2389.0	3992.6	3301.6	4903.3	4212.3	5815.0	5123.9	2168.3	1477.3
	5					2711.2	1847.1	3622.8	2759.8	4534.5	3670.4	5445.1	4582.1	2711.2	1847.1
	6					2341.3	1305.3	3253.0	2216.9	4165.7	3128.6	5076.3	4040.3	3253.0	2216.9
<b>420</b>	3	2999.0	2014.0	4670.0	3685.0	6340.0	5356.0	8011.0	7026.0	9682.0	8697.0	11353	10368	2999.5	2014.5
	4			3998.0	2685.0	5669.0	4356.0	7340.0	6027.0	9011.0	7698.0	10682	9369	3998.3	2685.3
	5					4998.0	3356.0	6669.0	5027.0	8340.0	6698.0	10010	8369	4998.2	3356.1
	6					4327.0	2357.0	5997.0	4028.0	7668.0	5698.0	9339	7369	5997.0	4028.9

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.

Specification

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"/> 0.2 – 1.0 bar	_____

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