

## Pneumatic double piston rotary actuator for butterfly valves and ball valves with 90° movement

**Article DR 100 = double acting**  
**Article SC 100 = single acting**

The latest generation of pneumatic actuators offers a high quality standard and innovative solutions for example such as the light outer rotation angle setting of 75° to 95°, single-acting actuators with safety springs and same dimensions.

High-tech elastomer O-rings allow a standard temperature-range from -40° C to +80° C. The most varied outer surface protection systems enable them to be used even under extreme conditions.

**Valve connection acc. to ISO 5211 F05 + F07**  
**octagonal shaft connection according to DIN 3337 17,0 mm**

Plug inserts allow the reduction to 9.0 mm / 11,0 mm or 14,0 mm

Standard with puck on the top at the housing for the visionary position indicator.



|  |   |
|--|---|
|  | Pressure Equipment Directive 2014/68 / EU (PED) |
|  | Environment -40°C ... +80°C                     |
|  | SIL 3 according to IEC 61508                    |
|  | ATEX 94/9/EC II2 GD EEx D IIB T6                |

### Technical data standard design

**construction type** Pneumatic double piston rotary actuator, same dimension double- or single-acting. safety springs in the end cap provide the safety position optionally OPEN or CLOSE

**Mounting position** random

**Interface actuator / signaling device** according to VDI / VDE 3845 (NAMUR)

**Norms**

**Interface actuator / solenoid valve** according to NAMUR or VDI/VDE 3845

**Interface actuator / valve** Four- or octagonal plug insert with ISO 5211 mounting hole pattern in the actuator body

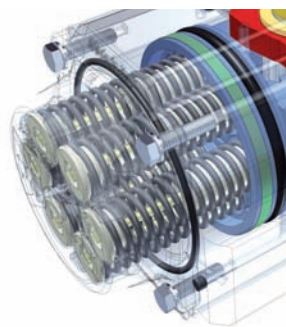
**ambient temperature** -40° C up to + 80° C NBR-seal kit (standard)  
 -15° C up to +150° C Viton-seal kit  
 -55° C up to + 80° C Super-low temperature

**torque** 3 Nm up to 13.000 Nm

**control pressure** 2,0 bar up to 8,0 bar (Ü)

**control medium** filtered air, with respect to residual oil content, dust and water, minimum according to DIN 8573-1

**air pressure quality** class 4, particle size < 30 µm  
 Tp < 20° C, Tp minimum +10° C

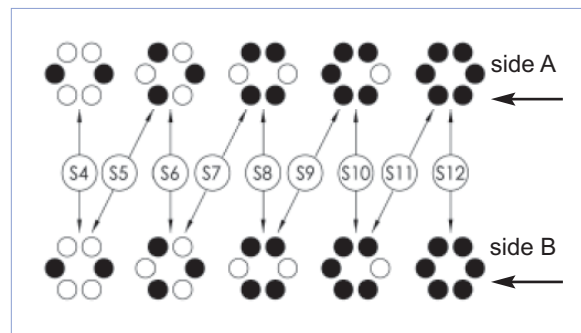


### spring package

- service-friendly safety springs
- number of springs variable according to control pressure
- protected against corrosion

### spring arrangement:

S 4 = 4 springs    S 5 = 5 springs    S 6 = 6 springs  
 S 7 = 7 springs    S 8 = 8 springs    S 9 = 9 springs  
 S10 = 10 springs    S11 = 11 springs    S12 = 12 springs



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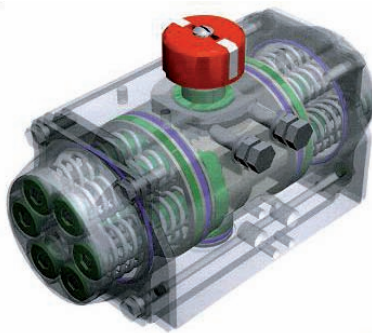
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### Possible mounting options for pneumatic actuators



Depending on the installation location and the atmospheric load, the following may be selected coating systems

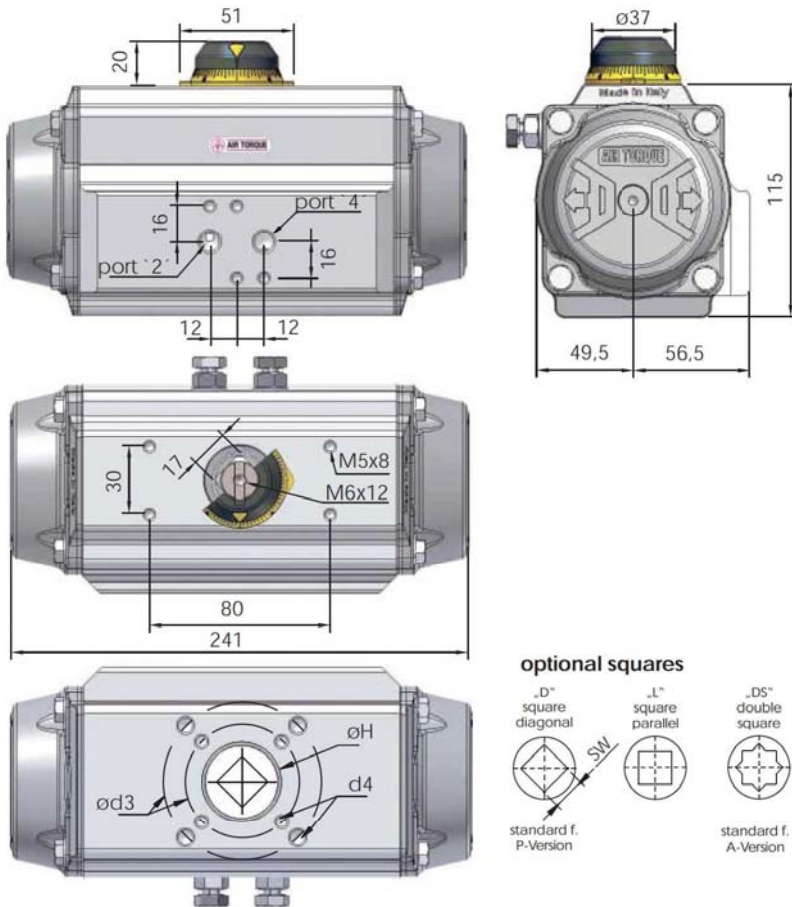


| description   | design            | parts and coating  |  |   |                                 | installation site   |
|---|-------------------|--|--|---|---------------------------------|---|
|   |                   | housing  | cap  | stem  | piston                          |   |
|  | Code "A" standard | ALODUR<br>30 - 35 µm<br>silver grey                        | anodized + polyester<br>80 - 90 µm<br>light gray             | chemically nickel plated<br>ENP<br>25 - 30 µm | anodized<br>15 - 20 µm<br>black | process industry<br>solvent resistant   |
|  | Code "B"          | anodized + PTFE coated<br>50 - 55 µm                       | anodized + polyester coated<br>95 - 110 µm                   | chemically nickel plated<br>ENP<br>25 - 30 µm | anodized<br>15 - 20 µm<br>black | general industry<br>light to medium<br>loaded atmosphere                      |
|  | Code "E"          | anodized + PTFE coated<br>50 - 55 µm                       | anodized + PTFE coated<br>50 - 55 µm                         | stainless steel<br>(1.4401)                   | anodized<br>15 - 20 µm<br>black | strong environmental<br>influences, strong<br>acidity and basic<br>atmosphere |
|  | Code "EC"         | anodized +<br>+ 1 primer<br>+ 2 Epoxy coating<br>85-120 µm | anodized +<br>+ 1 primer<br>+ 2 Epoxy coating<br>70 - 105 µm | stainless steel<br>(1.4401)                   | anodized<br>15 - 20 µm<br>black | direct lake vicinity<br>On- / Offshore<br>applications                        |

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## pneumatic actuator, DR/SC 100

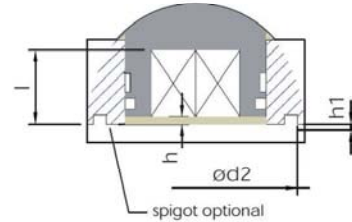
Dimensions in mm



### ISO 5211 - available flanges

| ISO 5211    | Standard   |         | optional              |
|-------------|------------|---------|-----------------------|
|             | F05* + F07 | F07     | F07                   |
| Ø d2        | 40         | -       | 55                    |
| Ø d3        | 50         | 70      | 70                    |
| d4          | M6x9       | M8x12   | M8 x 12               |
| Ø H         | 40         | -       | 55                    |
| SW x l min. | D          | -       | 11x19 - 14x18 - 17x19 |
|             | DS         | 17 x 19 | 17 x 19               |
| h min.      | 1,5        | 1,5     | 1,5                   |
| h1          | 1,5        | -       | 2                     |

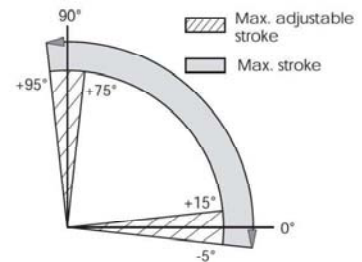
\*before selecting the flange connection please consider the indications of standard n° 5211 on page 0911 of our manual for op. and maintenance



### Connection / Attachment

|                                  |       |
|----------------------------------|-------|
| Pressure connection Port 2 and 4 | G1/8" |
| Ancillaries attachment           | AA 1  |

### Rotation and stroke adjustment



| Pressure | Output torque for double acting and spring return in Nm |      |       |      |         |      |       |     |         |     |         |     | Spring torque | approx. weight in kg |       |     |         |     |       |     |       |     |       |     |
|----------|---|------|-------|------|---------|------|-------|-----|---------|-----|---------|-----|---------------|----------------------|-------|-----|---------|-----|-------|-----|-------|-----|-------|-----|
|          | 2,5 bar   |      | 3 bar |      | 3,5 bar |      | 4 bar |     | 4,2 bar |     | 4,5 bar |     |               |                      | 5 bar |     | 5,5 bar |     | 6 bar |     | 7 bar |     | 8 bar |     |
|          | 0°  | 90°  | 0°    | 90°  | 0°      | 90°  | 0°    | 90° | 0°      | 90° | 0°      | 90° |               |                      | 0°    | 90° | 0°      | 90° | 0°    | 90° | 0°    | 90° | 0°    | 90° |
| DR       | 45,8  | 54,9 | 64,1  | 73,2 | 76,9    | 82,4 | 91,5  | 101 | 110     | 128 | 146     | -   | -             | -                    | -     | -   | -       | -   | -     | -   | -     | -   | 3,82  |     |

|        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |      |      |      |      |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|
| SC 2/3 | 27,4 | 16,9 | 36,6 | 26   | 45,7 | 35,2 | 54,9 | 44,3 | 58,5 | 48   | 64   | 53,5 | 73,2 | 62,6 |      |      |      |      |      |      |     |      | 28,9 | 18,3 | 4,07 |      |
| SC 3   | 23,8 | 11,1 | 32,9 | 20,3 | 42,1 | 29,4 | 51,2 | 38,6 | 54,9 | 42,2 | 60,4 | 47,7 | 69,5 | 56,9 | 78,7 | 66   |      |      |      |      |     |      |      | 34,7 | 22   | 4,12 |
| SC 3/4 |      |      | 29,2 | 14,5 | 38,4 | 23,6 | 47,5 | 32,8 | 51,2 | 36,4 | 56,7 | 41,9 | 65,8 | 51,1 | 75   | 60,2 | 84,2 | 69,4 |      |      |     |      |      | 40,4 | 25,7 | 4,17 |
| SC 4   |      |      |      |      | 34,7 | 17,9 | 43,9 | 27   | 47,5 | 30,7 | 53   | 36,2 | 62,2 | 45,3 | 71,3 | 54,5 | 80,5 | 63,6 | 98,8 | 81,9 |     |      |      | 46,2 | 29,3 | 4,22 |
| SC 4/5 |      |      |      |      |      |      | 40,2 | 21,2 | 43,9 | 24,9 | 49,4 | 30,4 | 58,5 | 39,5 | 67,7 | 48,7 | 76,8 | 57,8 | 95,1 | 76,1 | 113 | 94,5 |      | 52   | 33   | 4,27 |
| SC 5   |      |      |      |      |      |      |      |      |      |      | 45,7 | 24,6 | 54,8 | 33,8 | 64   | 42,9 | 73,1 | 52,1 | 91,5 | 70,4 | 110 | 88,7 |      | 57,8 | 36,7 | 4,32 |
| SC 5/6 |      |      |      |      |      |      |      |      |      |      |      |      | 51,2 | 28   | 60,3 | 37,1 | 69,5 | 46,3 | 87,8 | 64,6 | 106 | 82,9 |      | 63,5 | 40,3 | 4,37 |
| SC 6   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 56,7 | 31,4 | 65,8 | 40,5 | 84,1 | 58,8 | 102 | 77,1 |      | 69,3 | 44   | 4,42 |

| Pressure max. | Rotation (STD) (C) | Screw stroke adjustment | Chamber (Ø mm) | Air volume (l) |       | Moving time (sec.) (A) |                  |
|---------------|--------------------|-------------------------|----------------|----------------|-------|------------------------|------------------|
|               |                    |                         |                | OPEN           | CLOSE | OPEN                   | CLOSE            |
| 8 bar         | 0° - 90°           | for 1°<br>1/5 rotation  | 88             | 0,51           | 0,78  | D 0,40<br>S 0,50       | D 0,50<br>S 0,60 |

| Operating temperature (°C) (B) |                       |                               |
|--------------------------------|-----------------------|-------------------------------|
| ST (Standard)                  | HT (High temperature) | LLT (Extreme low temperature) |
| - 40 to + 80                   | - 15 to + 150         | - 55 to + 80                  |

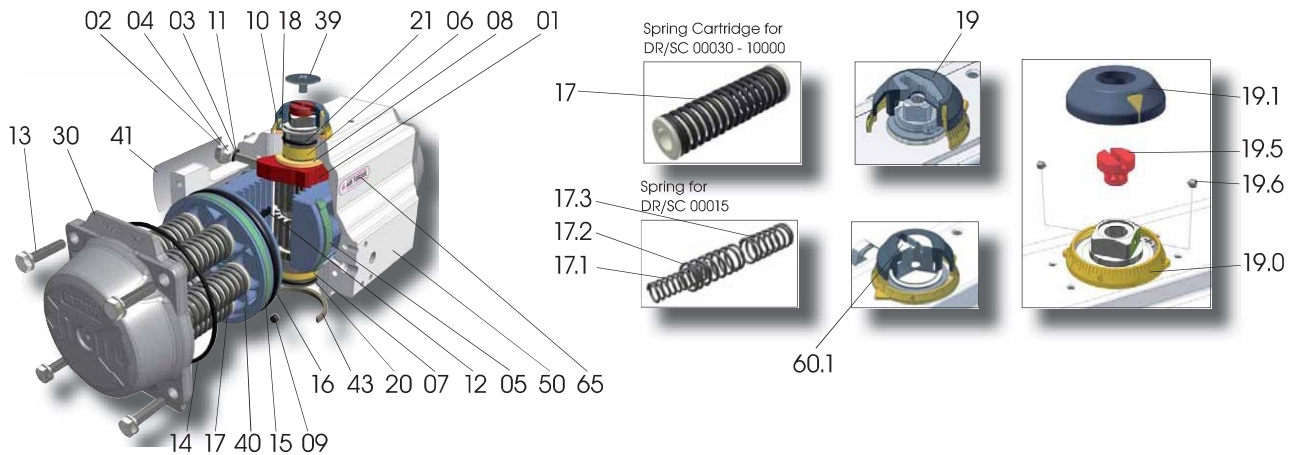
(A) the above indicated moving time of the actuator is obtained under the following test conditions: (1) room temperature, (2) actuator stroke 90°, (3) solenoid valve with Ø 4 mm and flow capacity Qn 400 L/min. (4) inside pipe Ø 8 mm, (5) medium clean air (6) air supply pressure 5,5 bar (79,75 Psi), (7) actuator without external resistance load. **Caution:** It has to be expected, e.g. for field applications, when one or more of the above parameters are different, the moving time will be different.

(B) Every temperature range option requires proper components and lubricant. Please contact BSA Armaturen.

#### Operating Medium:

The operating medium must be free of dust and oil. The maximum particle size must not exceed 30µ (ISO 8573 Part1, Class5). In order to prevent water condensation and/or solidification (ice when actuator works below 0°C), the operating medium must have a dew point equal to -20°C or at least 10°C below the ambient temperature (ISO 8573 Part1, Class 3).

## pneumatic actuator, DR/SC 100



| Pos. | Quantity / Note   | Description                     | Material   |
|------|---|---------------------------------|--|
| 01   | 1   | Octi-Cam (Stop arrangement)     | Stainless Steel (for DR/SC00015U - DR/SC00150U)<br>Carbon Steel / Nodular Cast Iron, zinc coated |
| 02   | 2   | Stop Cap Screw                  | Stainless Steel  |
| 03   | 2   | Washer                          | Stainless Steel  |
| 04   | 2   | Nut (Stop screw)                | Stainless Steel  |
| 05   | 2<br>4 for DR/SC 10000U   | Bearing (Piston top)            | hochwertiger Kunststoff  |
| 06   | 1   | Bearing (Pinion top)            | high-grade plastic   |
| 07   | 1   | Bearing (Pinion bottom)         | high-grade plastic   |
| 08   | 2   | Thrust bearing                  | high-grade plastic   |
| 09   | 2   | Plug                            | Silicone   |
| 09.1 | 2 for DR/SC 05000U-10000U   | O-Ring plug                     | M-NBR  |
| 10   | 1   | Thrust Washer                   | Stainless Steel  |
| 11   | 2   | O-Ring (Stop screw)             | M-NBR  |
| 12   | 2   | Piston Guide                    | high-grade plastic   |
| 13   | 8 for DR/SC 00015U-02000U<br>12 for DR/SC 03000U-04000U<br>16 for DR/SC 05000U-10000U | Cap Screw                       | Stainless Steel  |
| 13.1 | 16 for DR/SC 10000U   | Washer (Cap screw end cap)      | Stainless Steel  |
| 14   | 2   | O-Ring (End cap)                | M-NBR  |
| 15   | 2   | Bearing (Piston head)           | high-grade plastic   |
| 16   | 2   | O-Ring (Piston)                 | M-NBR  |
| 17   | max.12 for DR/SC 00030U-10000U  | Spring Cartridge                | SiCr Spring Steel  |
| 17.1 | max. 2 for DR/SC 00015U   | Spring                          |  |
| 17.2 |   | Spring                          |  |
| 17.3 |   | Spring                          |  |
| 18   | 1   | Spring Clip                     | SiCr Spring Steel, ENP   |
| 19   | 1 for DR/SC 00015U-00030U   | Position Indicator              | high-grade plastic / Stainless Steel   |
| 19.0 | 1   | Graduated Ring                  | high-grade plastic   |
| 19.1 | 1 for DR/SC 00015U-00030U   | Position Indicator              | high-grade plastic   |
| 19.5 | 1 for DR/SC 00015U-00030U   | Top Adaptor                     | Extruded Aluminium alloy, anodized   |
| 19.6 | 2 for DR/SC 00015U-00030U   | Hex. Socket Screw (Top adaptor) | Stainless Steel  |
| 20   | 1   | O-Ring (Pinion bottom)          | M-NBR  |
| 21   | 1   | O-Ring (Pinion top)             | M-NBR  |
| 30   | 2   | End Cap                         | Pressure Die Cast Aluminium alloy, coated<br>Cast Aluminium alloy, coated (DR/SC10000)           |
| 39   | 1   | Cap Screw (Indicator)           | high-grade plastic   |
| 40   | 2   | Piston                          | Pressure Die Cast Aluminium alloy, coated<br>Cast Aluminium alloy, coated (DR/SC10000)           |
| 41   | 1   | Label                           | Polyester Aluminium  |
| 43   | 1   | Spigot (on request*)            | Extruded Aluminium alloy, anodized   |
| 50   | 1   | Body                            | Extruded Aluminium alloy, coated<br>Cast Aluminium alloy, coated (DR/SC 05000+10000)             |
| 60   | 1   | Drive Shaft                     | Extruded Aluminium alloy, anodized (DR/SC10000)<br>Carbon Steel, ENP                             |
| 60.1 | 1 not for all types   | Integral Drive Shaft            | Stainless Steel, ENP   |
| 65   | 1   | Plastic Insert                  | high-grade plastic   |

○ enclosed in spare part kit    ◻ enclosed in O-Ring kit    \*on request

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