



**BR 31a · Quarter-turn actuator**

Version DAP / SRP 450 · Technical data and spare parts



**Applications**

Single-acting or double-acting piston actuators for butterfly valves, ball valves and other final control elements with rotary closure members. Particularly suitable for high process requirements in chemical plants:

- **Opening angle 90°**
- **Temperatures -40°C to +80°C**



## Dimensions of quarter-turn actuator

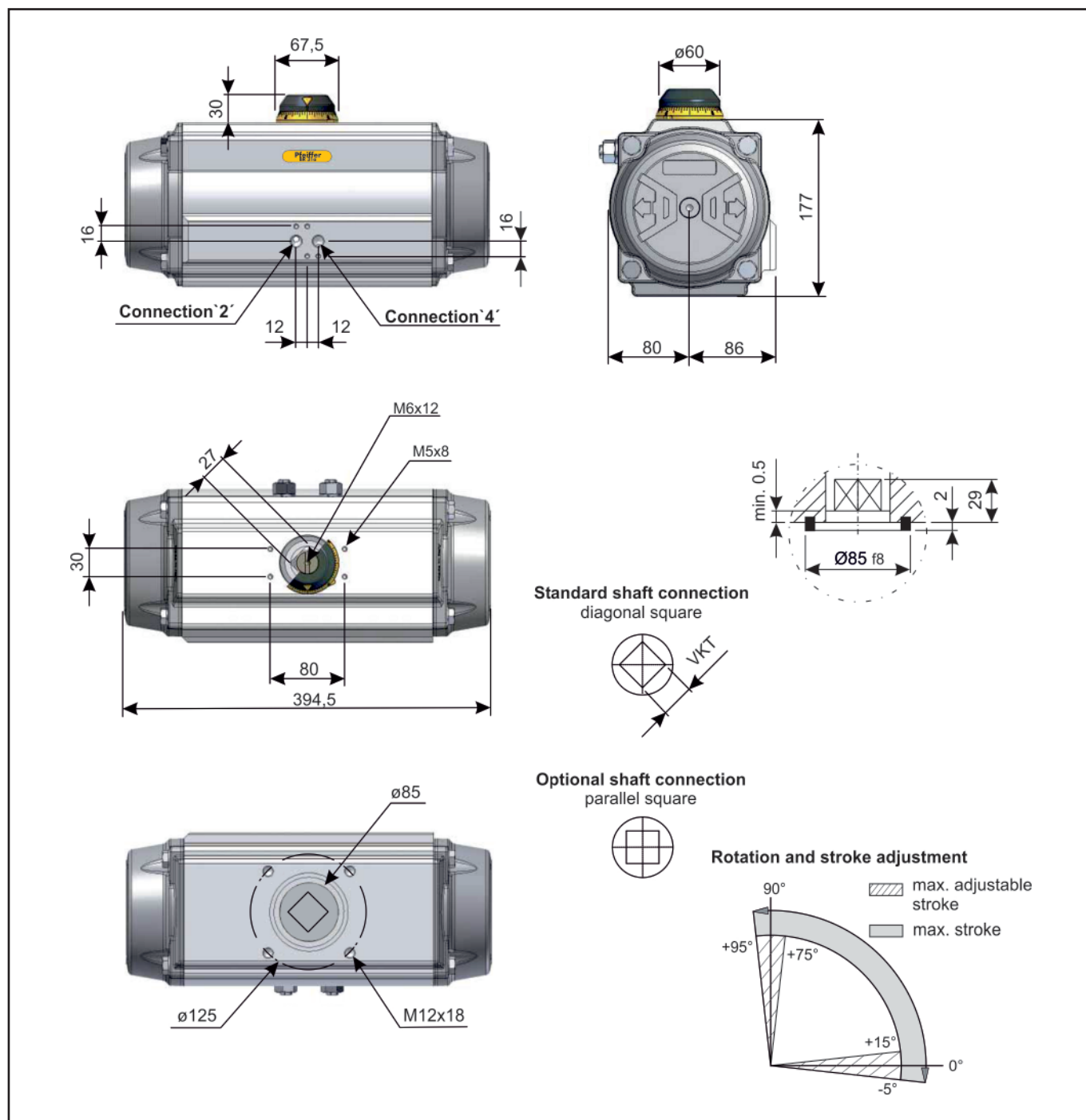


Fig. 2: Dimensional drawing

Table 1: Connection dimensions / Connections

|              |                   |                                |
|--------------|-------------------|--------------------------------|
| ISO 5211     | Flange            | F12                            |
|              | Square (diagonal) | 27mm                           |
| VDI/VDE 3845 | Air connection    | 24x32mm + 2x G $\frac{1}{4}$ " |
|              | Fixing level 1    | AA2 (80x30x30mm)               |

## Technical Data

**Table 2:** Torques for double and single acting quarter-turn actuators

| Type    | Torque double and single acting in Nm |      |      |      |     |      |     |      |     |      |     |      |     |      |     |     |     |     |     |     | Spring stroke |       | Weight in kg |      |      |
|---------|---------------------------------------|------|------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|---------------|-------|--------------|------|------|
|         | 2.5                                   |      | 3    |      | 3.5 |      | 4   |      | 4.2 |      | 4.5 |      | 5   |      | 5.5 |     | 6   |     | 7   |     | 8             |       |              | 90°  | 0°   |
|         | 0°                                    | 90°  | 0°   | 90°  | 0°  | 90°  | 0°  | 90°  | 0°  | 90°  | 0°  | 90°  | 0°  | 90°  | 0°  | 90° | 0°  | 90° | 0°  | 90° |               |       |              |      |      |
| DAP     | 217                                   | 261  | 304  | 348  | 365 | 391  | 435 | 478  | 522 | 609  | 696 | -    | -   | 14.2 |     |     |     |     |     |     |               |       |              |      |      |
|         |                                       |      |      |      |     |      |     |      |     |      |     |      |     |      |     |     |     |     |     |     |               | Start | End          |      |      |
| SRP 2,5 | 135                                   | 88.6 | 179  | 132  | 222 | 176  | 265 | 219  | 283 | 236  | 309 | 262  | 352 | 306  | 396 | 350 | 440 | 393 | 527 | 480 | 614           | 567   | 129          | 82.4 | 15.4 |
| SRP 3   | 119                                   | 62.8 | 162  | 106  | 206 | 150  | 249 | 193  | 266 | 211  | 293 | 237  | 336 | 280  | 379 | 324 | 423 | 367 | 510 | 454 | 597           | 541   | 155          | 99.0 | 15.6 |
| SRP 3,5 | 103                                   | 37.5 | 146  | 80.5 | 189 | 124  | 233 | 167  | 250 | 185  | 276 | 211  | 320 | 254  | 363 | 298 | 406 | 341 | 494 | 429 | 581           | 516   | 180          | 115  | 15.9 |
| SRP 4   | 85.5                                  | 11.5 | 129  | 55.0 | 173 | 98.2 | 216 | 142  | 233 | 159  | 260 | 185  | 303 | 229  | 347 | 272 | 390 | 316 | 477 | 403 | 564           | 490   | 206          | 132  | 16.1 |
| SRP 4,5 | 69.5                                  |      | 113  | 29.0 | 157 | 72.5 | 200 | 116  | 217 | 133  | 243 | 159  | 287 | 203  | 330 | 246 | 374 | 290 | 460 | 377 | 547           | 464   | 232          | 148  | 16.4 |
| SRP 5   | 52.5                                  |      | 96.0 | 3.0  | 140 | 46.5 | 183 | 90.0 | 200 | 107  | 227 | 134  | 270 | 177  | 314 | 221 | 357 | 264 | 444 | 351 | 531           | 438   | 258          | 165  | 16.6 |
| SRP 5,5 | 36.5                                  |      | 80.0 |      | 124 | 21.5 | 167 | 65.0 | 184 | 82.4 | 211 | 109  | 254 | 151  | 297 | 195 | 341 | 238 | 428 | 325 | 515           | 412   | 283          | 181  | 16.9 |
| SRP 6   | 19.5                                  |      | 63.0 |      | 107 |      | 150 | 39.0 | 167 | 56.4 | 194 | 82.5 | 237 | 126  | 281 | 169 | 324 | 213 | 411 | 299 | 498           | 386   | 309          | 198  | 17.1 |

**Table 3:** Specially technical data

| Type | Pressure max. in bar | Rotation     | Screw stroke adjustment | Chamber Ø in mm | Air volume in Litre |       | Moving time in Sec. <sup>1)</sup> |       | Operating temperature in °C <sup>2)</sup> |                 |                 |
|------|----------------------|--------------|-------------------------|-----------------|---------------------|-------|-----------------------------------|-------|---|-----------------|-----------------|
|      |                      |              |                         |                 | Open                | Close | Open                              | Close | STD (Standard)                            | HT (High temp.) | SLT (Low temp.) |
| DAP  | 8                    | 90° -5°/+15° | for 1°<br>1/4 rotation  | 145             | 2.41                | 3.78  | 1.20                              | 1.40  | -40 bis +80                               | -15 bis +150    | -55 bis +80     |
| SRP  |                      |              |                         |                 |                     |       | 1.50                              | 1.80  |   |                 |                 |

<sup>1)</sup> 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 Ø4mm and flow capacity Qn 400 L/min., (4) inside pipe Ø8mm, (5) medium clean air, (6) air supply pressure 5,5 bar (79,75 Psi), (7) actuator without external resistance load.

**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.**

<sup>2)</sup> For HT (high temperature) and SLT (low temperature) applications a special grease is needed. Please contact PFEIFFER.

**Table 4:** Air consumption

| Type     | Air consumption in Litre / Switching cycle <sup>3)</sup> |       |       |       |       |       |       |       |       |       |
|----------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Pressure | 2.5  | 3     | 3.5   | 4     | 4.5   | 5     | 5.5   | 6     | 7     | 8     |
| DAP      | 21.67  | 24.76 | 27.86 | 30.95 | 34.05 | 37.14 | 40.24 | 43.33 | 49.52 | 55.71 |
| SRP      | 8.44   | 9.64  | 10.85 | 12.05 | 13.26 | 14.46 | 15.67 | 16.87 | 19.28 | 21.69 |

<sup>3)</sup> A switching cycle is the movement from 0° to 90° + 90° to 0°

## 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, Class3).

## Parts list for actuator DAP/SRP 450

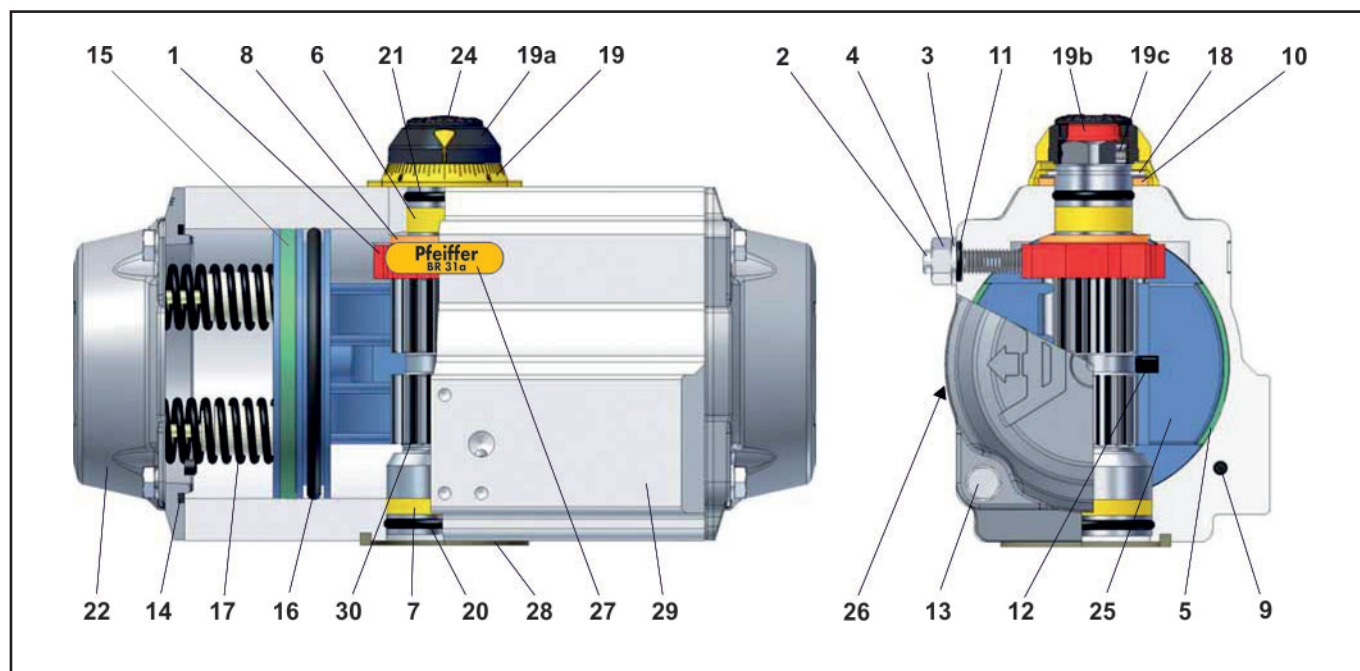


Fig. 3: Quarter-turn actuator BR 31a, Type SRP 450

Table 5: Parts and spare parts list

| Item                   | Qty.    | Description               | Material   | Abrasion package for SRP/DAP 450            |
|------------------------|---------|---------------------------|--|---|
| 1                      | 1       | Octi-cam                  | Carbon steel, zinc coated                              | STD = 43725v<br>HT = 45439v<br>SLT = 48028v |
| 2                      | 2       | Stop cap screw            | Stainless steel  |   |
| 3                      | 2       | Washer                    | Stainless steel  |   |
| 4                      | 2       | Stop screw                | Stainless steel  |   |
| 5 <sup>1)</sup>        | 2       | Piston guide bearing      | PA46   |   |
| 6 <sup>1)</sup>        | 1       | Pinion top bearing        | High-grade polymers                                    |   |
| 7 <sup>1)</sup>        | 1       | Pinion bottom bearing     | High-grade polymers                                    |   |
| 8 <sup>1)</sup>        | 2       | Pinion thrust bearing     | PA46   |   |
| 9 <sup>1) 2) 3)</sup>  | 2       | Plug                      | Silicone   |   |
| 10                     | 1       | Thrust washer             | Stainless steel  |   |
| 11 <sup>1) 2) 3)</sup> | 2       | O-ring                    | M-NBR  |   |
| 12                     | 2       | Piston guide              | PA66+GF  |   |
| 13                     | 16      | Cap Screw                 | Stainless steel  |   |
| 14 <sup>1) 2) 3)</sup> | 2       | O-ring                    | M-NBR  |   |
| 15 <sup>1) 2)</sup>    | 2       | Piston head bearing       | POM  |   |
| 16 <sup>1) 2) 3)</sup> | 2       | O-ring                    | M-NBR  |   |
| 17                     | 5 to 12 | Spring pressure cartridge | SiCr Spring alloy Steel epoxy coated                   |   |
| 18                     | 1       | Spring clip               | Spring steel, ENP                                      |   |
| 19                     | 1       | Graduated ring            | PA66+GF(+CB)   |   |
| 19a                    | 1       | Position indicator        | PA66+GF+CB   |   |
| 19b                    | 1       | Top adaptor               | Extruded aluminium alloy, anodized                     |   |
| 19c                    |         | Hex. socket screw         | Stainless steel  |   |
| 20 <sup>1) 2) 3)</sup> | 1       | O-ring                    | M-NBR  |   |
| 21 <sup>1) 2) 3)</sup> | 1       | O-ring                    | M-NBR  |   |
| 22                     | 1       | End cap                   | Pressure die cast aluminium alloy, anodized and coated |   |
| 24                     | 1       | Cap screw                 | PA66+GF+CB   |   |
| 25                     | 2       | Piston                    | Pressure die cast aluminium alloy, anodized            |   |
| 26                     | 1       | Identification label      | Polyester-Silver                                       |   |
| 27                     | 1       | Plate                     | Polyester  |   |
| 28                     | 1       | Spigot                    | Extruded aluminium alloy, anodized                     |   |
| 29                     | 1       | Body                      | Extruded aluminium alloy, coated                       |   |
| 30                     | 1       | Drive shaft               | Steel, ENP   |   |

<sup>1)</sup> Included in the abrasion package (STD), <sup>2)</sup> Included in the high temperature kit (HT), <sup>3)</sup> Included in the low temperature set (SLT)