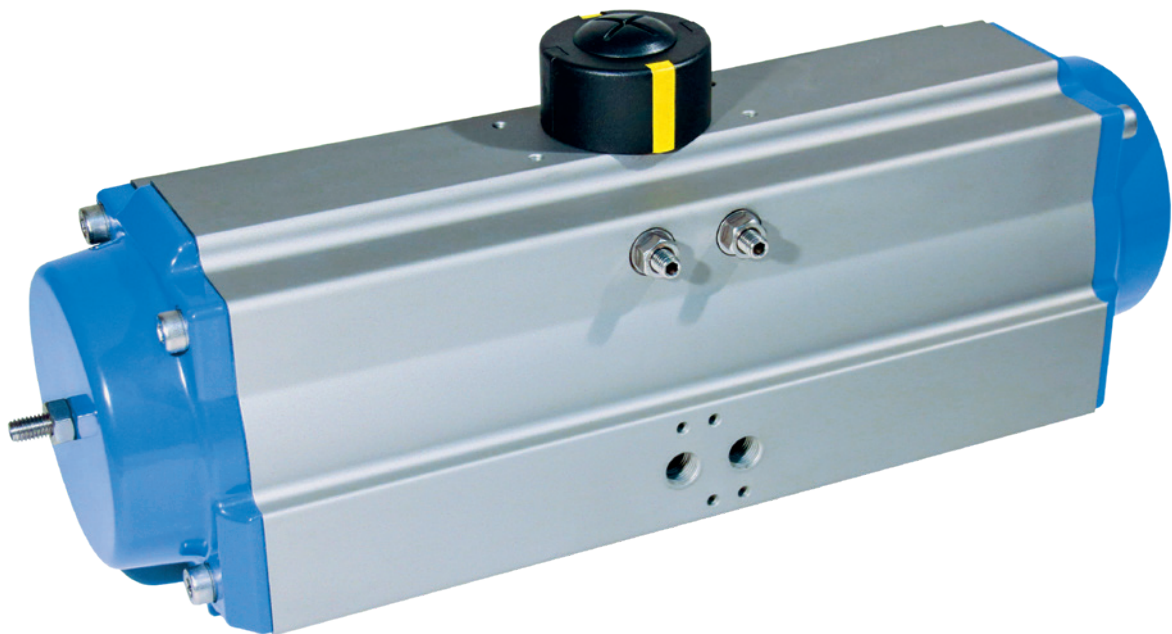


bar-agturn®

The versatile pneumatic actuator

Technical data sheet

Extended rotating angle up to 180°



Objective

The actuator series agturn with the extended rotating angles 120°/135°/180° can be used for valves which have a working range beyond the standard 90° opening angle, e.g. 3-way valves as well as pipe diverters and hinged boxes.

With our variable adjustment options, any desired rotating angle between 90° and 180° can be precisely adjusted to the individual valve. This reduces the number of variants, increases availability in the application, and reduces stock-keeping.

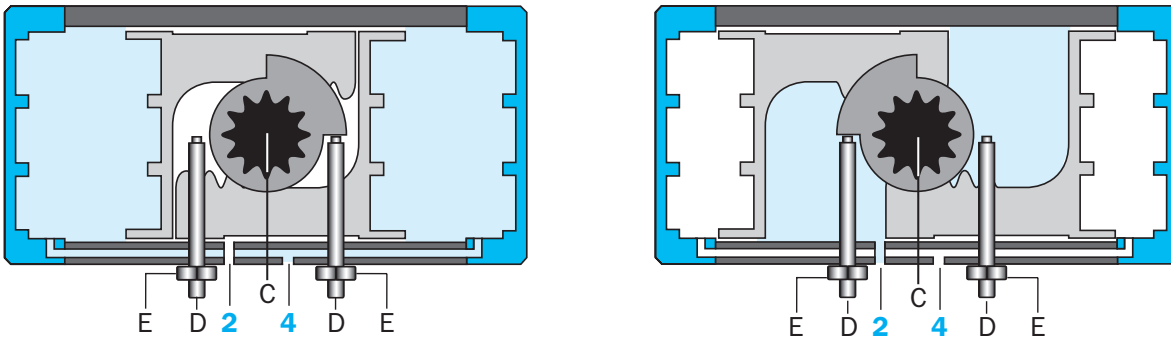
Use

- With 11 different sizes and torques ranging from 8 to 2,082 Nm, a suitable quarter-turn actuator is available for every shut-off valve application in the range from 90° to 180° opening angle.
- the high-quality powder coating of the cap and casing made of hard-coated aluminium allows the usage even in aggressive environmental conditions
- the solenoid valve interface is located on the profile and easily accessible which optimizes the installation of pilot valves
- the end position adjustment on the same side of the solenoid valve connection facilitates the adjustment process
- the standardised interface VDI/VDE 3845 can be used to set up all commercially available signal and control devices
- the end positions can be configured between 0°-, 120°- up to 180°-position as well as from + 5° to -5°, whereby the valve can be optimally adjusted
- there are 2 ISO flange patterns available for most of the sizes per each actuator size to ensure flexible automation of valves
- the octagonal pinion connection adapts a parallel or diagonal selector shaft alignment of the valve and ensures a space-saving actuator construction
- a laser engraving on the actuator casing marks the flange patterns and air connections for a clear allocation
- the serial number is also laser engraved; this helps to trace the actuator manufacturing at any time
- precisely milled piston tooth system ensures smoother running, optimum torque and low wear
- a long service life is achieved by using the plain bearing for all moving parts
- the actuators cover a wide range of applications thanks to the actuator variants with different swivel angles
- elevated failsafe performance by our SIL 3 certified actuators

Technical data

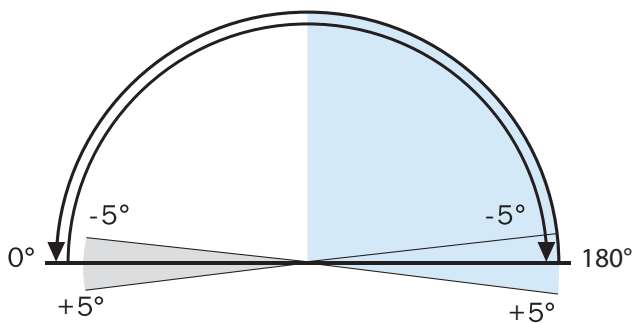
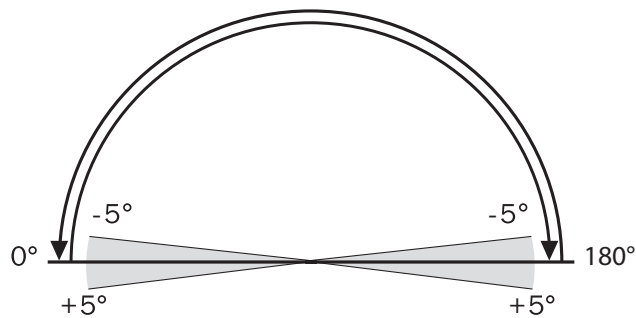
| | Standard model | Options available |
|--------------------------|--|--|
| Construction type | pneumatic twin-piston quarter-turn actuator type GD = double-acting | |
| Design features | rack-and-pinion principle with self-centering piston guide in the casing; | |
| Installation position | any desired | |
| Standards | connection point actuator signal device: acc. to VDI/VDE 3845 (NAMUR) connection point actuator/control valve: acc. to NAMUR or VDI/VDE 3845 connection point actuator/valve: four or eight internal threads in the actuator casing: acc. to EN ISO 5211 | different mounting and connection dimensions are possible actuator pinion optionally with double-D bore according to EN ISO 5211 or according to customer requirements |
| Materials | casing: aluminium-alloy, hard anodized cap: aluminium-alloy, powder-coated piston/rack: aluminium-alloy pinion: corrosion-protected steel seals: NBR bearings: made of plastic with very good sliding properties screws: stainless steel A2 | casing coating: powder-coated; PTFE cap coating: PTFE pinion: stainless steel 303; AISI 316 seals: FKM |
| Ambient temperature | -20 °C to +80 °C | low temperature design: -40 °C to +80 °C high temperature design: -20 °C to +160 °C |
| Nominal pivoting angle | double-acting: 180° nominal pivoting angle can be adjusted as standard from + 5° to -5° in both end positions | differing rotating angles, from 90° up to 180° any desired, e.g. 135° |
| Torque | 8 to 2.082 Nm | |
| Control pressure | 2 to 8 bar | |
| Control medium / Quality | filtered air with regard to residual oil content, dust and water minimum according to DIN ISO 8573-1: 2010 [7:-:4] | upon request also can be operated with other non-aggressive, gaseous or liquid media |
| Certificates | SIL 3 by TÜV Rheinland, test basis IEC 61508 Parts 1-2 and 4-7:2010 | |

Function double-acting GD-056 to -216

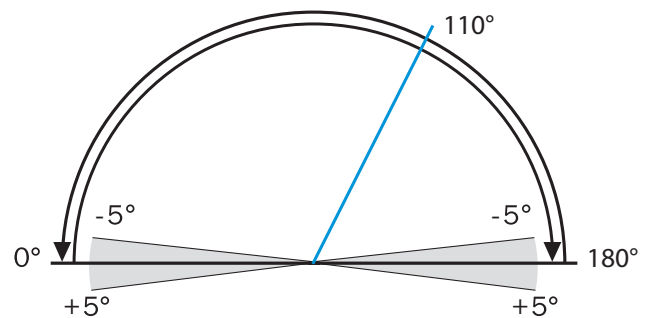


If the two outer chambers are pressurised via connection „4“, the pistons move towards each other into the basic position (0°). The force of both pistons is transmitted to the pinion „C“ via the racks. If connection „2“ is pressurised and connection „4“ is vented, the pistons move apart into the 90° position.

The pivoting angle can be adjusted between + 5° and - 5° in a pressureless state in both positions with the end position adjustment screws „D“ and secured with the lock nut „E“.

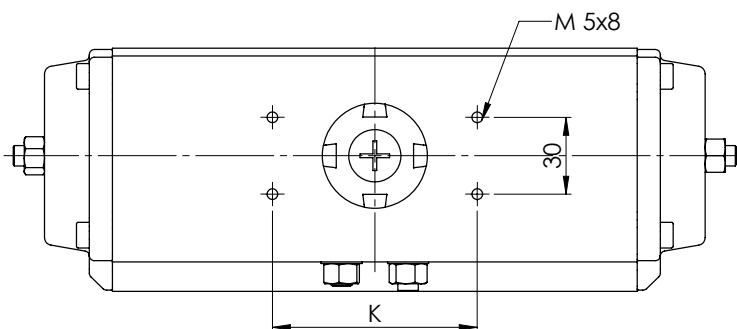
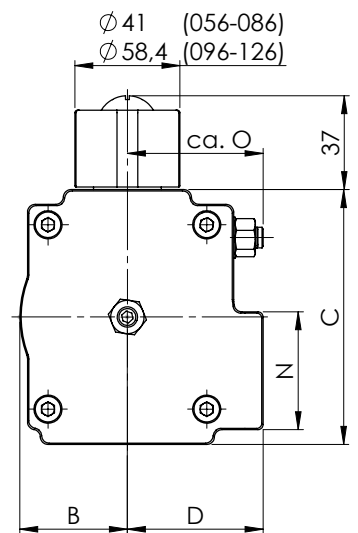
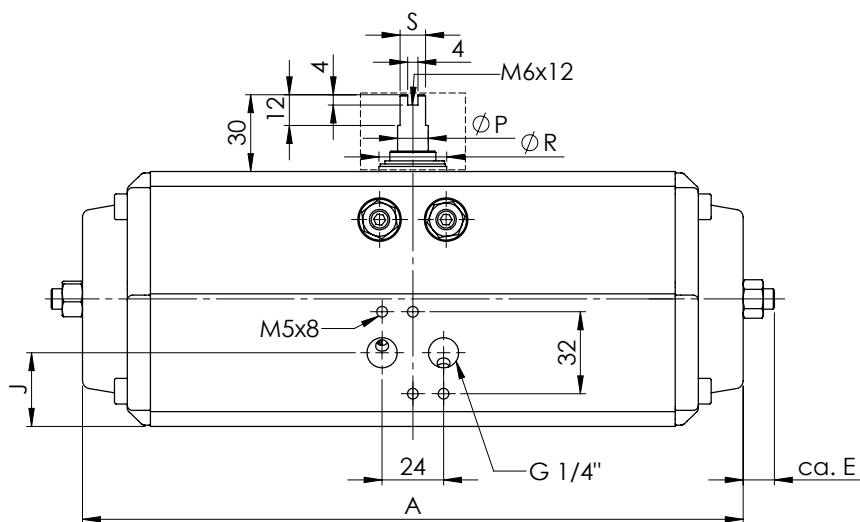
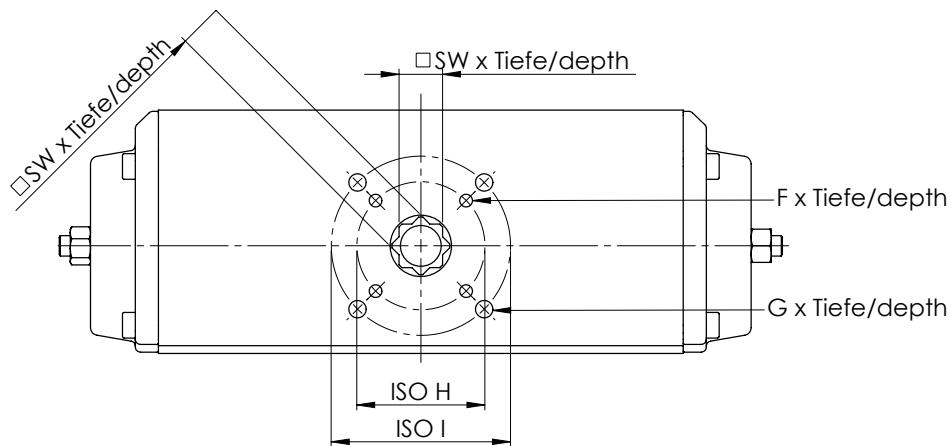
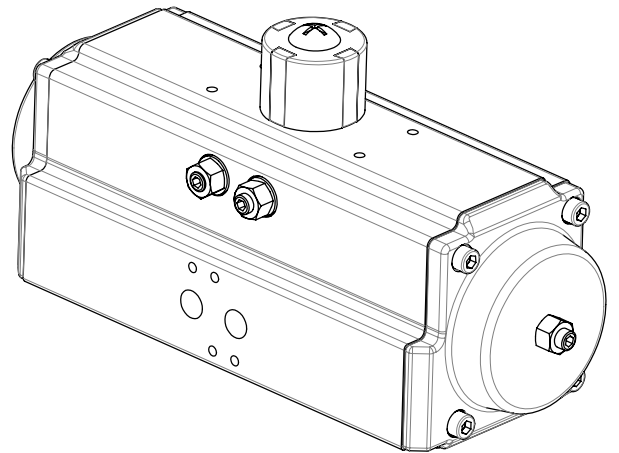


Optional mode of action OA:
External stroke limitation up to 90°



Optional version with adjustment of the outer stroke limitation for a desired presetting in the range between 90° and 180°, here shown with 110°.

Dimensional drawings for type GD-056 to -126



Dimensional drawings for type GD-146 to -216

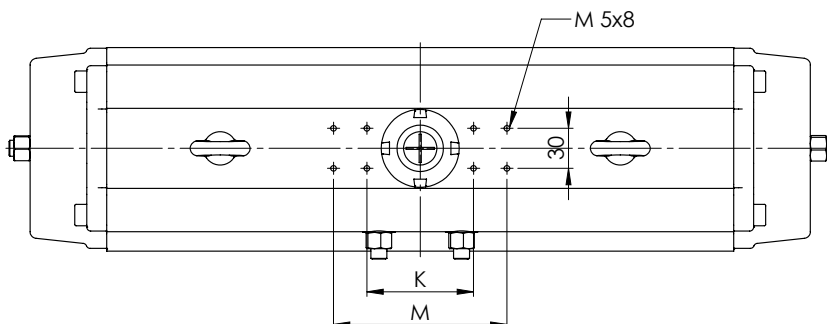
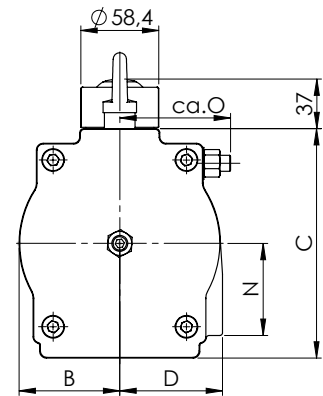
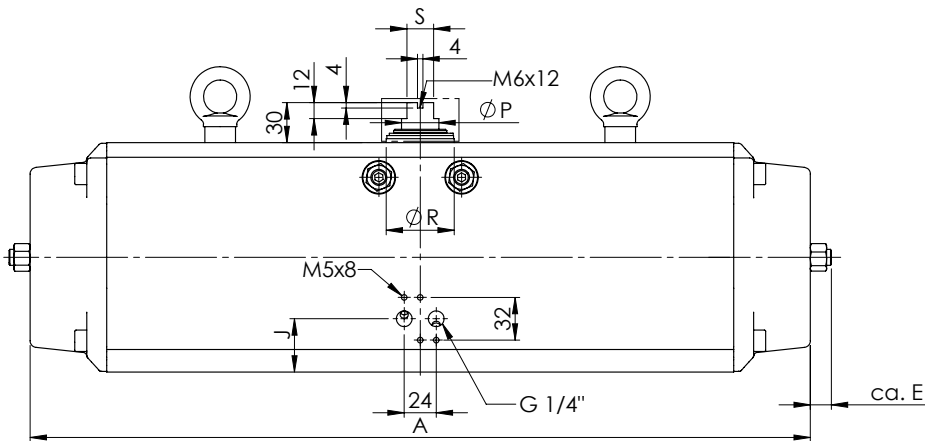
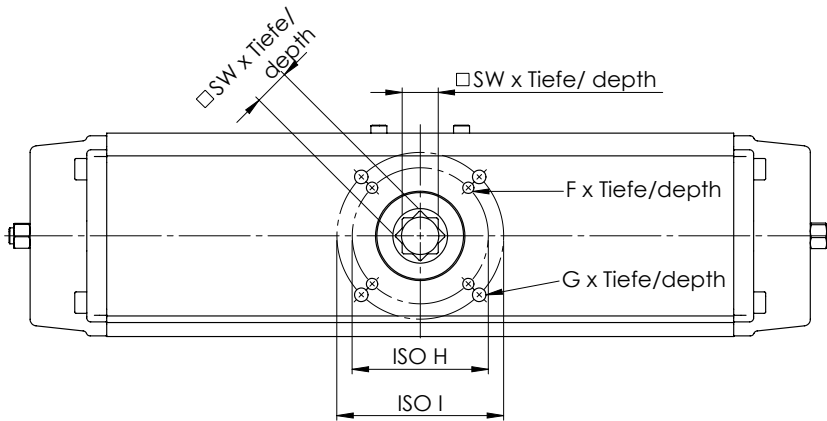
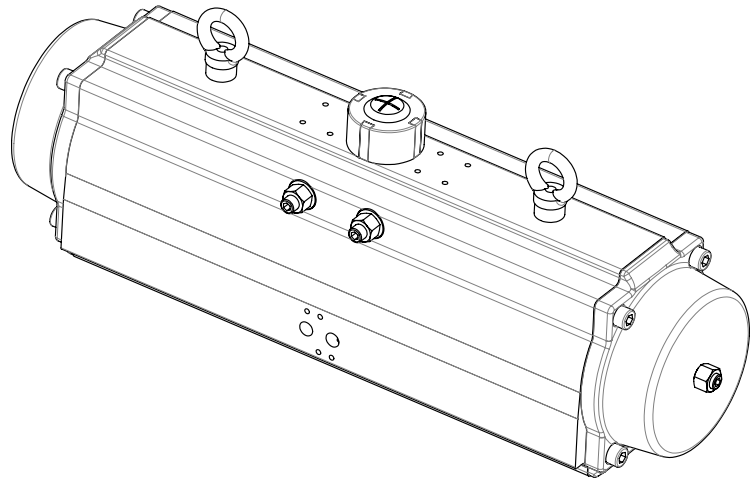


Table of dimensions

| Type GD | A | B | C | D | E | F x depth | G x depth | ISO H | ISO I | J | K | M | N | O | P | R | S | SW x depth |
|------------|-----|------|-------|------|------|-----------|-----------|----------|----------|-------|-----|-----|-------|-----|-------|----|-------|------------|
| 056 | 210 | 30 | 72 | 41,5 | 14,4 | M5x8 | M6x9 | ø36/F03 | ø50/F05 | 24 | 80 | 46 | 39 | ø12 | ø21,5 | 10 | 11x14 | |
| 066 | 241 | 36 | 88 | 47 | 12,7 | M6x10 | M8x13 | ø50/F05 | ø70/F07 | 27 | 80 | 46 | 43 | ø12 | ø26,5 | 10 | 14x18 | |
| 076 | 258 | 42 | 99,5 | 53 | 12,2 | M6x10 | M8x13 | ø50/F05 | ø70/F07 | 28,75 | 80 | 46 | 51 | ø12 | ø26,5 | 10 | 17x21 | |
| 086 | 302 | 46 | 109 | 57 | 14,6 | M6x10 | M8x13 | ø50/F05 | ø70/F07 | 29 | 80 | 46 | 53 | ø12 | ø26,5 | 10 | 17x21 | |
| 096 | 375 | 50 | 116,5 | 58,5 | 18,5 | M6x10 | M8x13 | ø50/F05 | ø70/F07 | 28,75 | 80 | 46 | 60 | ø18 | ø35 | 14 | 17x21 | |
| 106 | 397 | 57,5 | 133 | 67 | 16,8 | M8x13 | M10x16 | ø70/F07 | ø102/F10 | 33,5 | 80 | 46 | 65 | ø18 | ø35 | 14 | 22x26 | |
| 126 | 440 | 67,5 | 155 | 74,5 | 20,6 | M8x13 | M10x16 | ø70/F07 | ø102/F10 | 38,5 | 80 | 46 | 71 | ø28 | ø46 | 20 | 22x26 | |
| 146 | 585 | 75,5 | 172 | 77 | 15,7 | M10x16 | M12x19 | ø102/F10 | ø125/F12 | 40 | 80 | 130 | 96 | ø28 | ø51 | 20 | 27x31 | |
| 166 | 675 | 87 | 197 | 87 | 14,5 | M10x16 | M12x19 | ø102/F10 | ø125/F12 | 44,5 | 80 | 130 | 77 | ø28 | ø51 | 20 | 27x31 | |
| 196 | 781 | 103 | 230 | 103 | 33,1 | M16x24 | | ø140/F14 | | 51 | 130 | 91 | 111,5 | ø44 | ø61 | 32 | 36x40 | |
| 216 | 789 | 113 | 255 | 113 | 29,1 | M16x24 | | ø140/F14 | | 58,5 | 130 | 98 | 123,6 | ø44 | ø73 | 32 | 36x40 | |

Weight and volume

| Type GD | weight [kg] | Volume/double stroke [L] |
|----------------|-------------|--------------------------|
| / | / | / |
| / | / | / |
| 056/180 | 1,9 | 0,47 |
| 066/180 | 2,9 | 0,79 |
| 076/180 | 3,7 | 1,13 |
| 086/180 | 4,9 | 1,6 |
| 096/180 | 6,6 | 2,45 |
| 106/180 | 9,0 | 3,48 |
| 126/180 | 13,0 | 5,65 |
| 146/180 | 21,0 | 9,16 |
| 166/180 | 31,0 | 13,69 |
| 196/180 | 46,0 | 22,33 |
| 216/180 | 54,0 | 28,53 |

Torques double-acting actuators, type GD [Nm]

When determining the actuator sizes, a safety factor for the valve must always be taken into account. The recommended safety factor is minimum 30 %. Since this safety factor is subject to the operating conditions, the required safety factor may possibly be much higher.

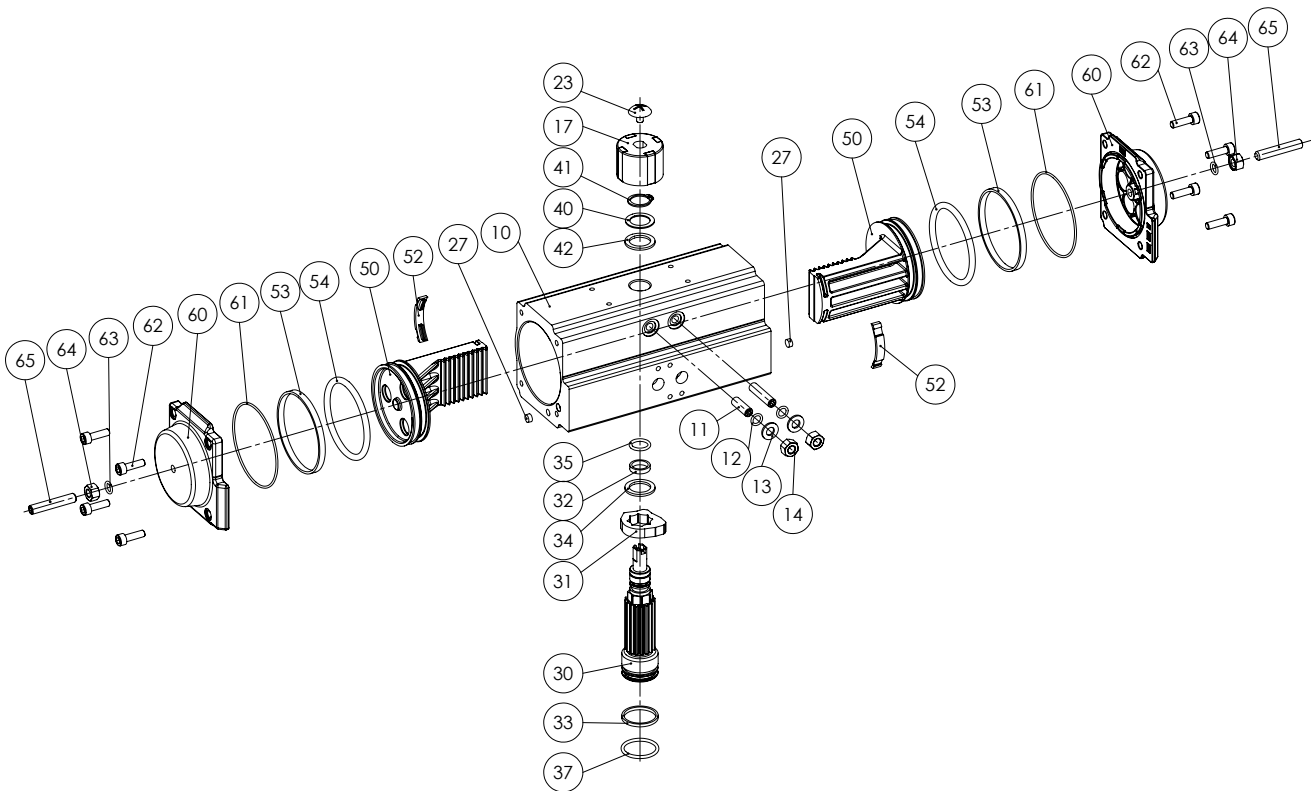
| Typ | Pneumatic applied torque Md N [Nm] at minimum control pressure P _{St} [bar] | | | | | | | | | | |
|--------|--|-----|-----|-----|------|------|------|------|------|------|------|
| | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 | 5,5 | 6 | 7 | 8 |
| GD-056 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 28 | 32 |
| GD-066 | 14 | 18 | 21 | 25 | 28 | 32 | 35 | 39 | 42 | 49 | 56 |
| GD-076 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 70 | 79 |
| GD-086 | 31 | 38 | 46 | 53 | 61 | 69 | 76 | 84 | 92 | 107 | 122 |
| GD-096 | 45 | 56 | 67 | 79 | 90 | 101 | 112 | 124 | 135 | 157 | 180 |
| GD-106 | 65 | 81 | 98 | 114 | 130 | 146 | 163 | 179 | 195 | 228 | 260 |
| GD-126 | 101 | 127 | 152 | 178 | 203 | 228 | 254 | 279 | 304 | 355 | 406 |
| GD-146 | 174 | 217 | 260 | 304 | 347 | 390 | 434 | 477 | 521 | 607 | 694 |
| GD-166 | 264 | 331 | 397 | 463 | 529 | 595 | 661 | 727 | 793 | 925 | 1058 |
| GD-196 | 426 | 533 | 639 | 746 | 852 | 959 | 1066 | 1172 | 1279 | 1492 | 1705 |
| GD-216 | 521 | 651 | 781 | 911 | 1041 | 1171 | 1302 | 1432 | 1562 | 1822 | 2082 |

Components GD-056/180 – GD-216/180

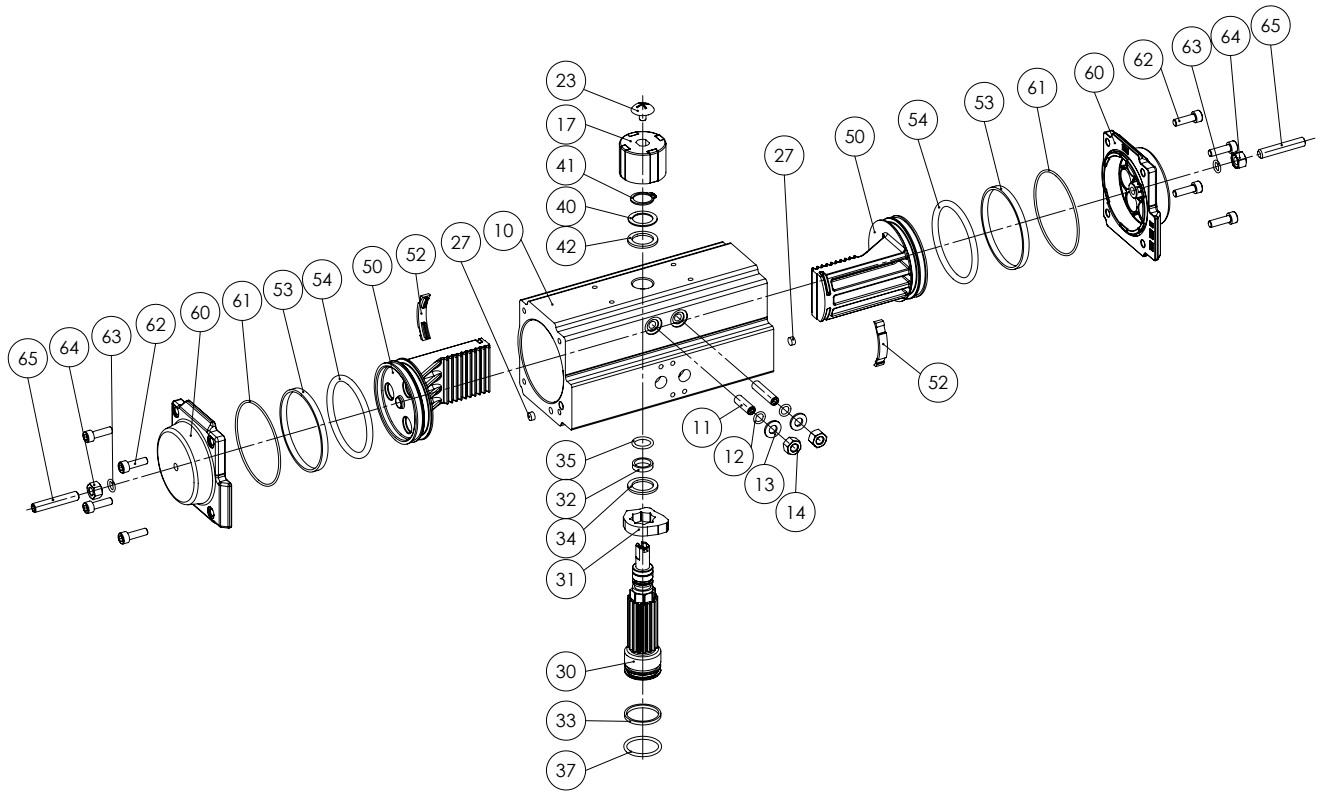
| | | | | | | | |
|------------|--|-----------|----------------------|-----------|-----------------------|-------------|------------------|
| 10 | Casing | 27 | Sealing plug | 37 | Seal pinion lower | 54 | Piston sealing |
| 11 | Stop screw | 30 | Pinion | 40 | Support washer | 60** | Cap |
| 12 | Seal Stop screw | 31 | Stop pin | 41 | Lock washer | 61 | Cap seal |
| 13 | Washer | 32 | Pinion bearing upper | 42 | Outside thrust washer | 62 | Cap screws |
| 14 | Lock nut | 33 | Pinion bearing lower | 50 | Piston | 63 | Sealing ring cap |
| 23 | Fixing screw for position indicator | 34 | Inside thrust washer | 52 | Guiding shoe | 64 | Stop screw cap |
| 25* | Ring nut | 35 | Seal pinion upper | 53 | Guide ring | 65 | Lock nut cap |
| 26* | Plastic washer | | | | | | |

* Ring lugs from GD-146 / ** GD-056 to GD-126 with cap right and left



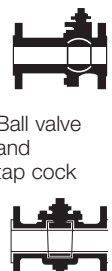



Schematic diagram GD-056/180 – GD-126/180



Schematic diagram GD-146/180 – GD-216/180



Mounting options

| 2/2-way valve | Drive pinion design | Operating way | Installation variant | 2/2-way valve | Drive pinion design | Operating way | Installation variant |
|---|--|------------------------------------|----------------------|---|--|------------------------------------|----------------------|
|  | Octagon = V  | Single-acting spring force "close" | F |  | Octagon = V  | Single-acting spring force "close" | F |
| | | Single-acting spring force "open" | H | | | Single-acting spring force "open" | H |
| | Double-D = Z (upon request)  | Single-acting spring force "close" | A | | Double-D = Z (upon request)  | Single-acting spring force "close" | A |
| | | Single-acting spring force "open" | D | | | Single-acting spring force "open" | D |

Order codes (examples)

Please contact us for your order.

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bar
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