

The versatile pneumatic actuator

## Technical data sheet



## Objective

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With 40 years of experience in automation we are able to meet the current requirements of the valve market and together with the bar-actuator we have developed a new pneumatic quarter-turn actuator for our diverse customer groups.

Thanks to its special design, robust construction and great versatility in technical characteristics, we fulfil the demands from the plant designer and plant manufacturer to the user.

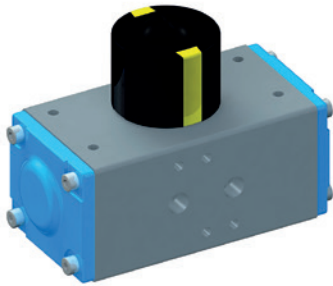
This covers a very wide range of torque values and swivel angles.

## Use

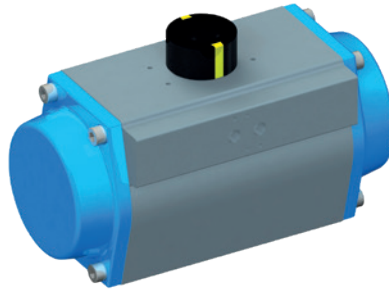
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- a suitable rotary actuator is available for each application of shut-off valves due to 18 different sizes and torques from 2 to 13.040 Nm
- the high-quality powder coating of the cap and casing made of hard-coated aluminium allows the usage even in aggressive environmental conditions
- the solenoid valve interface is located high on the profile and easily accessible which optimizes the installation of pilot valves
- the end position adjustment on the opposite 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 position indicator is part of the product which is equipped with variable clips for displaying the valve position
- the end positions can be configured between 0° and 90° 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
- simple assembly and disassembly of the safety springs which are designed for a balanced ratio between pneumatic torque and spring torque
- each control pressure is assigned to a defined number of springs and facilitates the actuator selection based on the torques
- 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
- a reduced stock level is achieved by using identical caps for single- and double-acting actuators
- the unmistakable design is patent-protected and guarantees the original actuator type with a design based on the principle „Form follows function“
- elevated failsafe performance by our SIL 3 certified actuators

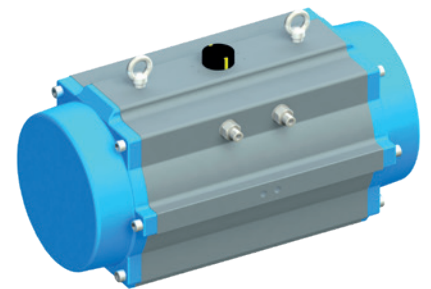
Type GD-032



Type GD/GS-040 to -270



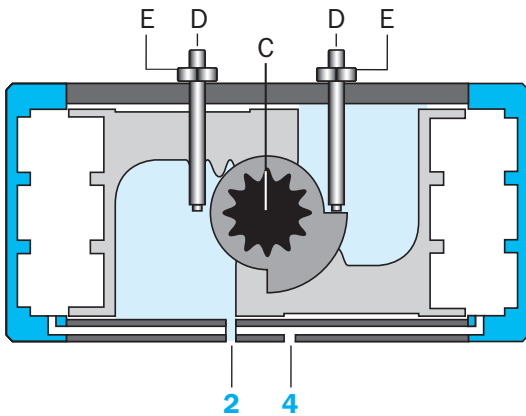
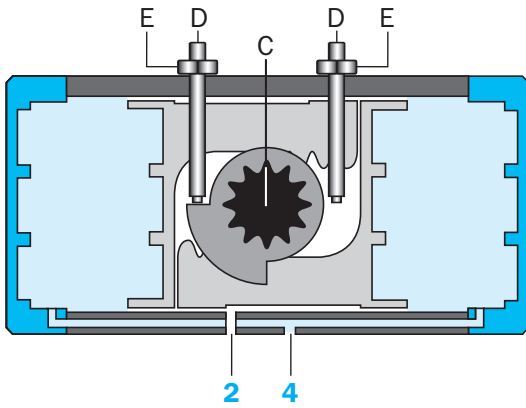
Type GD/GS-300 to -400



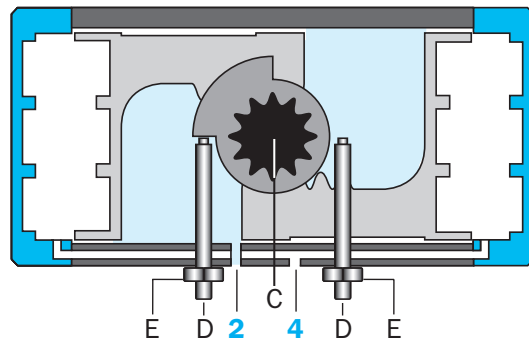
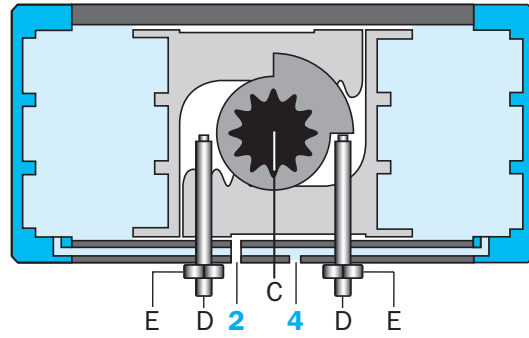
## Technical data

	Standard model	Options available
Construction type	pneumatic twin-piston quarter-turn actuator type GD = double-acting type GS = single-acting (with spring return)	
Design features	rack-and-pinion principle with self-centering piston guide in the casing; single-acting: with safety springs	
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: 90°, 120°, 180° single-acting: 90° nominal pivoting angle can be adjusted as standard from + 5° to -5° in both end positions	differing rotating angles, e.g. 135°  swivel angle limitation up to 100 %
Torque	2 to 13.040 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-032 to -210**

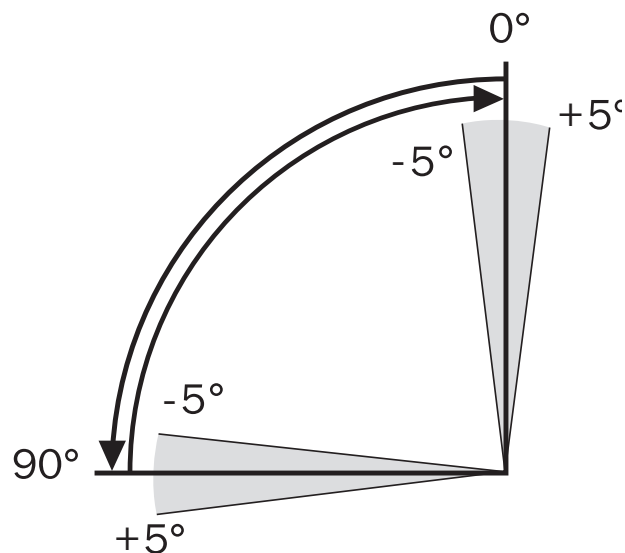


**Function double-acting  
GD-240 to -400**

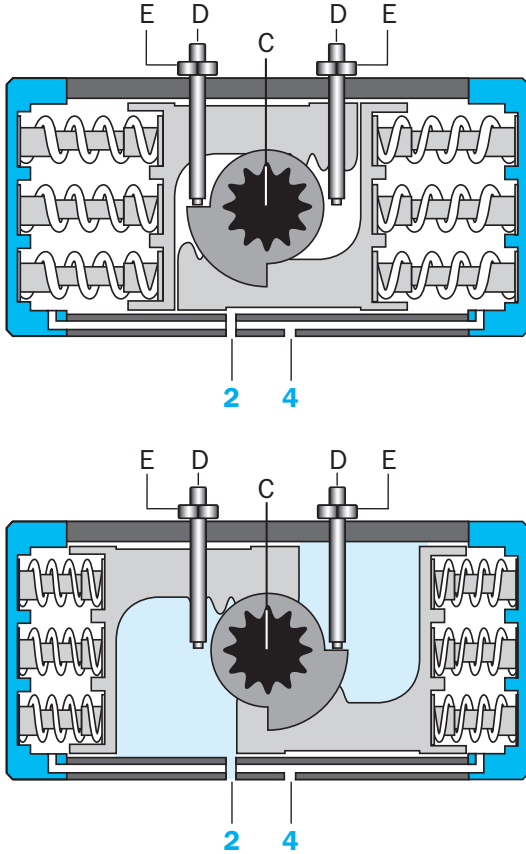


If the two outer chambers are pressurised via connection „4“, the pistons move towards each other into the basic position (0°). The force of both pistons is transmitted to the pinion „C“ via the racks. If connection „2“ is pressurised and connection „4“ is vented, the pistons move apart into the 90°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

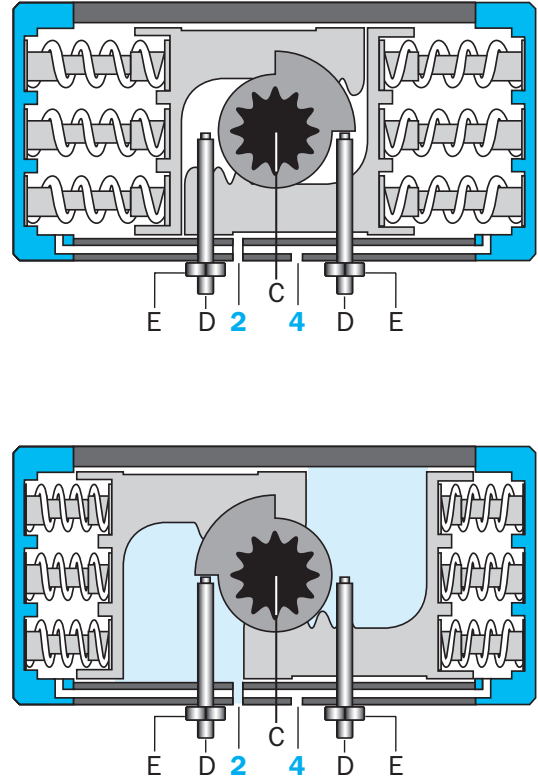
The pivoting angle can be adjusted between + 5° and - 5° in a pressureless state in both positions with the end position adjustment screws „D“ and secured with the lock nut „E“.



**Function single-acting  
GS-052 to -210**



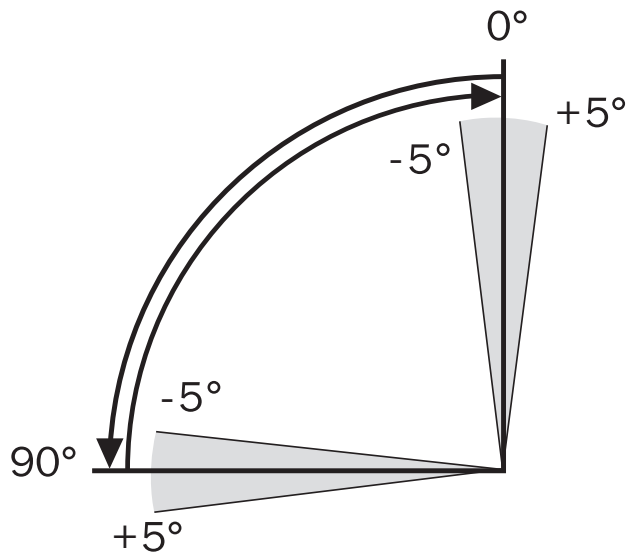
**Function single-acting  
GS-240 to -400**



In the single-acting model the springs push the pistons back into the basic position and air is exhausted from connection „2“.

The number of springs can be adapted to the available control pressure.

The setting of the end positions is carried out as described under „Function double-acting“.







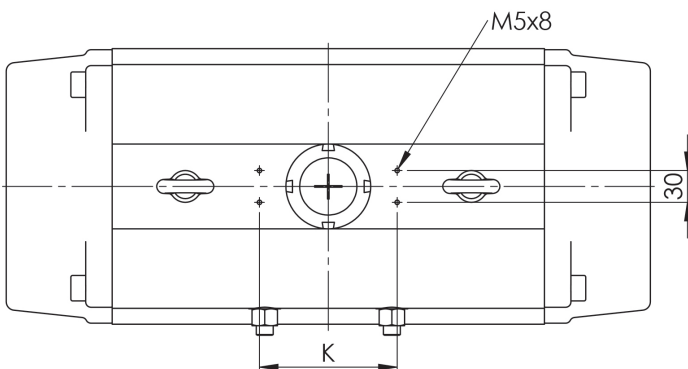
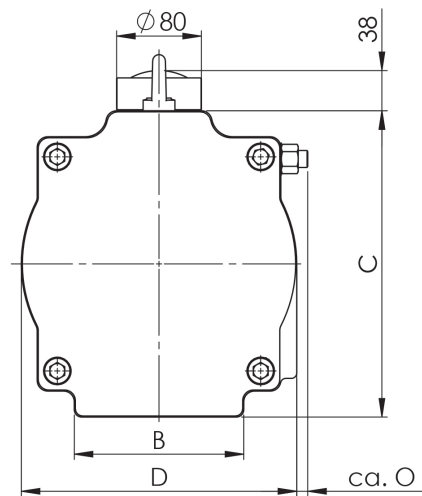
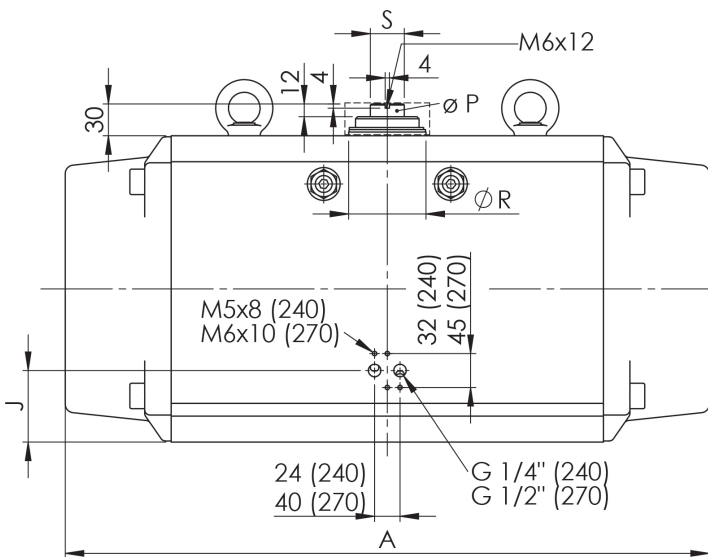
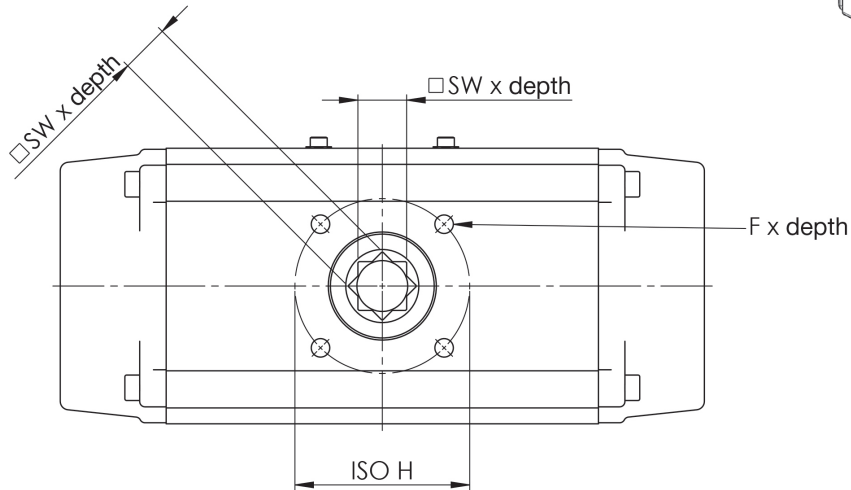
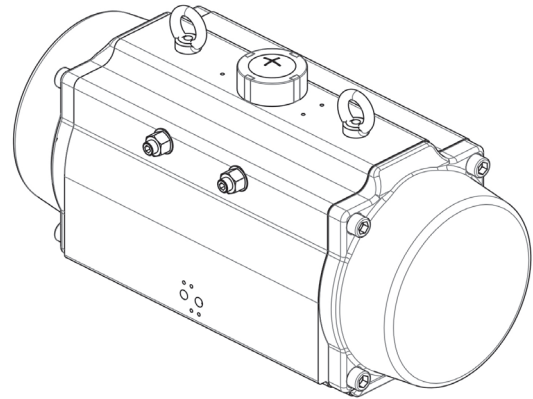




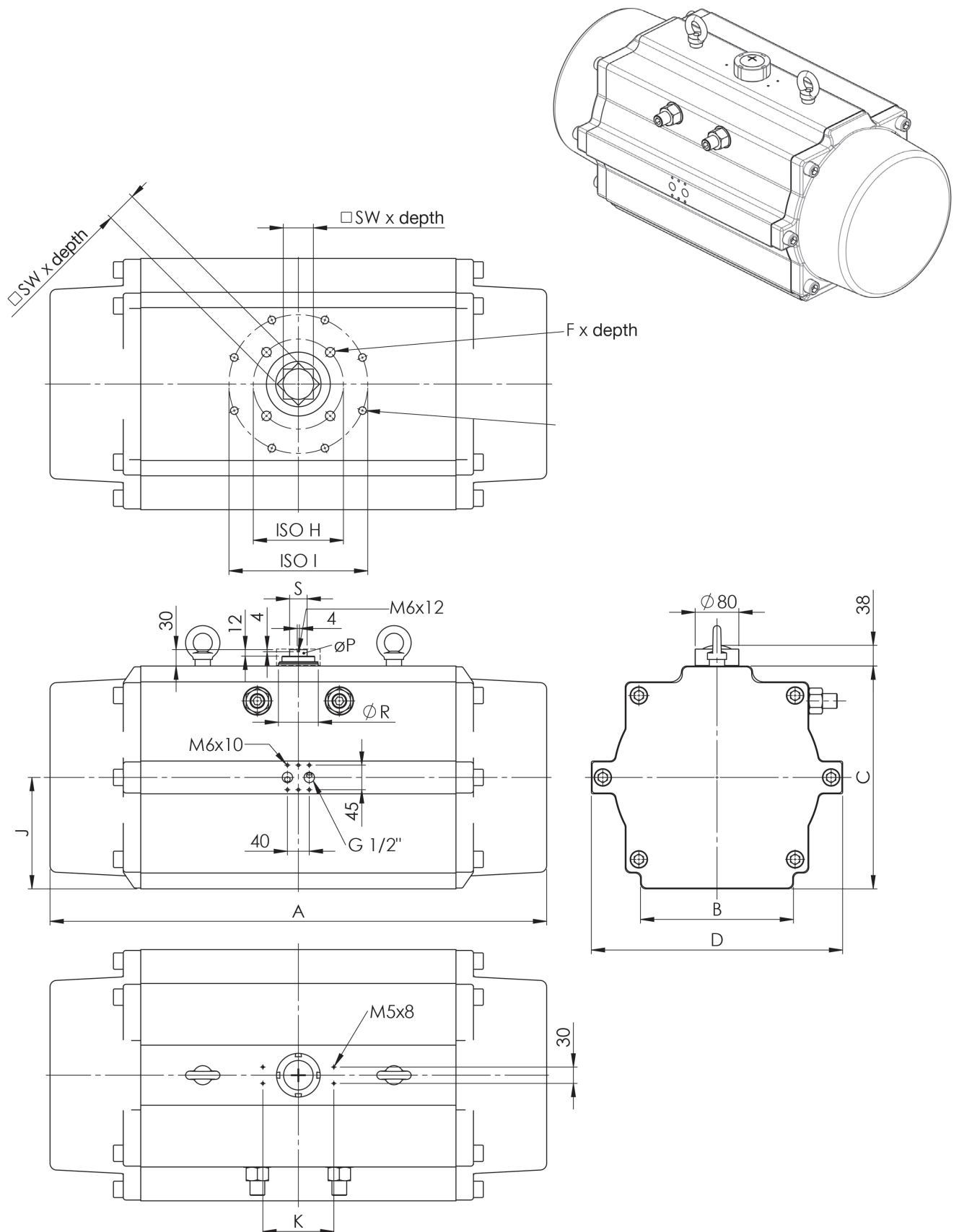




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## Dimensional drawings for type GDA/GSR-300, -350 and -400



## Table of dimensions

Type	A	A1	B	C	D	E	F x depth	G x depth	ISO H	ISO I	J	K	N	O	O1	P	R	S	SW x depth
<b>032</b>	114		55	49		1/8"	M5x8		ø36/F03		24,5	80				ø12	ø21,5	10	9x11
<b>040</b>	120		60,5	60		1/4"	M5x8	M6x9	ø36/F03	ø50/F05	24	80		15		ø12	ø21,5	10	11x14
<b>052</b>	147	210	60	72	74,5	1/4"	M5x8	M6x9	ø36/F03	ø50/F05	48	80	46	9	16	ø12	ø21,5	10	11x14
<b>063</b>	165	241	72	88	83	1/4"	M6x10	M8x13	ø50/F05	ø70/F07	61	80	46	12	14	ø12	ø26,5	10	14x18
<b>075</b>	182	258	84	99,5	95	1/4"	M6x10	M8x13	ø50/F05	ø70/F07	73,3	80	46	11	14	ø12	ø26,5	10	17x19
<b>083</b>	208	302	92	109	103	1/4"	M6x10	M8x13	ø50/F05	ø70/F07	80	80	46	12	16	ø12	ø26,5	10	17x21
<b>092</b>	262	375	102	116,5	109,5	1/4"	M6x10	M8x13	ø50/F05	ø70/F07	91	80	46	9	22	ø18	ø35	14	17x21
<b>105</b>	270	397	115	133	124,5	1/4"	M8x13	M10x16	ø70/F07	ø102/F10	99,5	80	46	7,5	16	ø18	ø35	14	22x26
<b>125</b>	301	443	135	155	142	1/4"	M8x13	M10x16	ø70/F07	ø102/F10	127	80	46	8,5	23	ø28	ø46	20	22x26
<b>140</b>	395	585	152	172		1/4"	M10x16	M12x19	ø102/F10	ø125/F12	138	(*)	75	7	16	ø28	ø51	20	27x31
<b>160</b>	454	675	174	197		1/4"	M10x16	M12x19	ø102/F10	ø125/F12	159,5	(*)	84	6	15	ø28	ø51	20	27x31
<b>190</b>	528	781	206	230		1/4"	M16x24		ø140/F14		188	130	100	8,5	38	ø44	ø61	32	36x40
<b>210</b>	536	789	226	255		1/4"	M16x24		ø140/F14		205,5	130	115	10,5	35	ø44	ø73	32	36x40
<b>240</b>	608		160	289	260	1/4"	M20x25		ø165/F16		67,5	130		10,5		ø44	ø73	32	46x50
<b>270</b>	721		160	328	294	1/2"	M20x25		ø165/F16		79	130		13,5		ø44	ø73	32	46x50
<b>300</b>	769		210	348	406	1/2"	M20x25		ø165/F16		174	130				ø44	ø73	32	46x60
<b>350</b>	909		280	408	460	1/2"	M20x25	M16x25	ø165/F16	ø254/F25	204	130				ø44	ø73	32	55x60
<b>400</b>	925		300	480	516	1/2"	M20x25	M16x25	ø165/F16	ø254/F25	240	130				ø44	ø73	32	55x60

\* For actuator sizes 140 and 160, dimension **K** is 80 and 130 mm.

## Double-acting actuators

Type GDA	Weight [kg]	Volume/double stroke [L]	Type GDA	Weight [kg]	Volume/double stroke [L]
<b>032</b>	0,73	0,09	/	/	/
<b>040</b>	0,9	0,19	/	/	/
<b>052</b>	1,3	0,28	<b>052/180</b>	1,9	0,47
<b>063</b>	2,0	0,44	<b>063/180</b>	2,9	0,79
<b>075</b>	2,55	0,64	<b>075/180</b>	3,7	1,13
<b>083</b>	3,25	0,9	<b>083/180</b>	4,9	1,6
<b>092</b>	5,24	1,37	<b>092/180</b>	6,6	2,45
<b>105</b>	6,06	1,83	<b>105/180</b>	9,0	3,48
<b>125</b>	10,00	3,0	<b>125/180</b>	13,0	5,65
<b>140</b>	14,02	4,7	<b>140/180</b>	21,0	9,16
<b>160</b>	24,52	6,9	<b>160/180</b>	31,0	13,69
<b>190</b>	32,4	11,3	<b>190/180</b>	46,0	22,33
<b>210</b>	39,8	15,0	<b>210/180</b>	54,0	28,53
<b>240</b>	57,0	20,0	/	/	/
<b>270</b>	78,7	31,0	/	/	/
<b>300</b>	121,7	53,5	/	/	/
<b>350</b>	210,2	81,4	/	/	/
<b>400</b>	280	108,6	/	/	/

## Single-acting actuators

Type GSR	Weight* [kg]	Volume/double stroke [L]
<b>032</b>	/	/
<b>040</b>	/	/
<b>052</b>	1,43	0,12
<b>063</b>	2,17	0,21
<b>075</b>	2,81	0,30
<b>083</b>	3,67	0,43
<b>092</b>	6,01	0,64
<b>105</b>	6,9	0,95
<b>125</b>	11,38	1,6
<b>140</b>	16,42	2,5
<b>160</b>	28,32	3,7
<b>190</b>	39,4	5,9
<b>210</b>	49,3	7,5
<b>240</b>	70,0	11,0
<b>270</b>	100,3	17,0
<b>300</b>	149,12	23,8
<b>350</b>	259,3	35,1
<b>400</b>	325	52,6

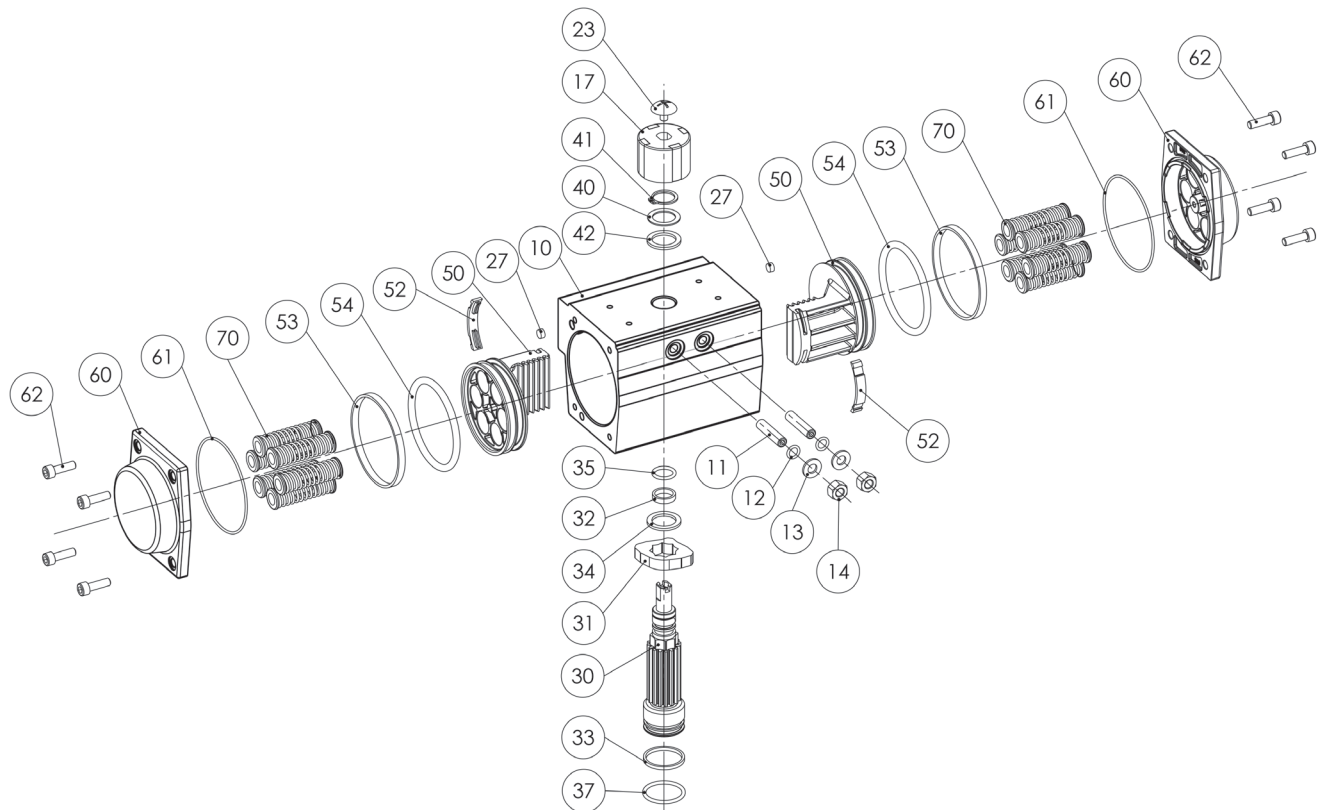
\* Weight with 12 springs

## Components GDA-032 to -040 and GDA/GSR-052 to -400




<b>10</b>	Casing		<b>30</b>	Pinion				
<b>11</b>	Stop screw	Not applicable to size -032	<b>31</b>	Stop pin	Not applicable to size -032	<b>50</b>	Piston	
<b>12</b>	Seal Stop screw	Not applicable to size -032	<b>32</b>	Pinion bearing upper	Not applicable to size -032	<b>52</b>	Guiding shoe	Not applicable to size -032
<b>13</b>	Washer	Not applicable to size -032	<b>33</b>	Pinion bearing lower	Not applicable to size -032	<b>53</b>	Guide ring	Not applicable to -032 and -040, 2 x to size -350 and -400
<b>14</b>	Lock nut	Not applicable to size -032	<b>34</b>	Inside thrust washer		<b>54</b>	Piston sealing	2 x for size -400
<b>17</b>	Position indicator		<b>35</b>	Seal pinion upper		<b>60</b>	Cap	
<b>23</b>	Fixing screw for position indicator		<b>37</b>	Seal pinion lower		<b>61</b>	Cap seal	
<b>25*</b>	Ring nut	Size -160 to -400	<b>40</b>	Support washer		<b>62</b>	Cap screws	
<b>26*</b>	Plastic washer	Size -160 to -400	<b>41</b>	Lock washer		<b>70</b>	Springs	Not applicable to -032 and -040
<b>27</b>	Sealing plug	Not applicable to size -032	<b>42</b>	Outside thrust washer				





\* Slings from GD/GS-160

## Schematic diagram



## Mounting options

2/2-way valve	Drive pinion design	Operating way	
Flap  	Octagon = V  	Single-acting spring force "close"	
		Single-acting spring force "open"	
	Double-D = Z (upon request)  	Single-acting spring force "close"	
		Single-acting spring force "open"	

2/2-way valve	Drive pinion design	Operating way	
 Ball valve and tap cock  	Octagon = V  	Single-acting spring force "close"	
		Single-acting spring force "open"	
	Double-D = Z (upon request)  	Single-acting spring force "close"	
		Single-acting spring force "open"	

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