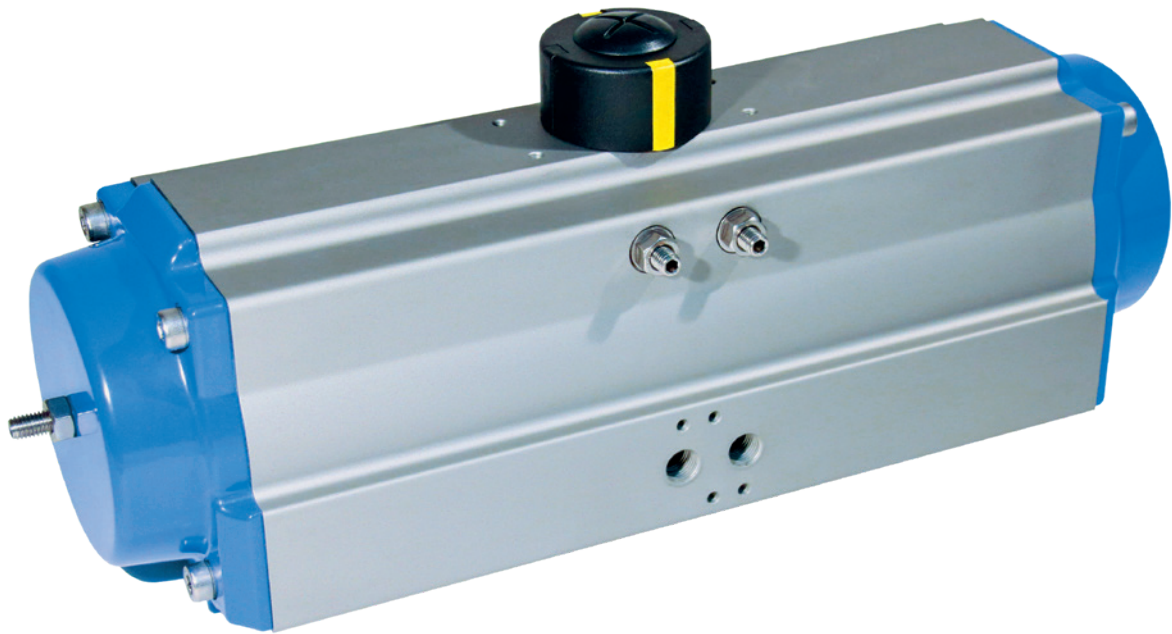


CR-TEC Engineering

A u t o m a t e d V a l v e S o l u t i o n s

GDA Pneumatic Actuators
Extended rotating angle up to 180°

Technical Data Sheet



Objective

The actuator series GDA 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.

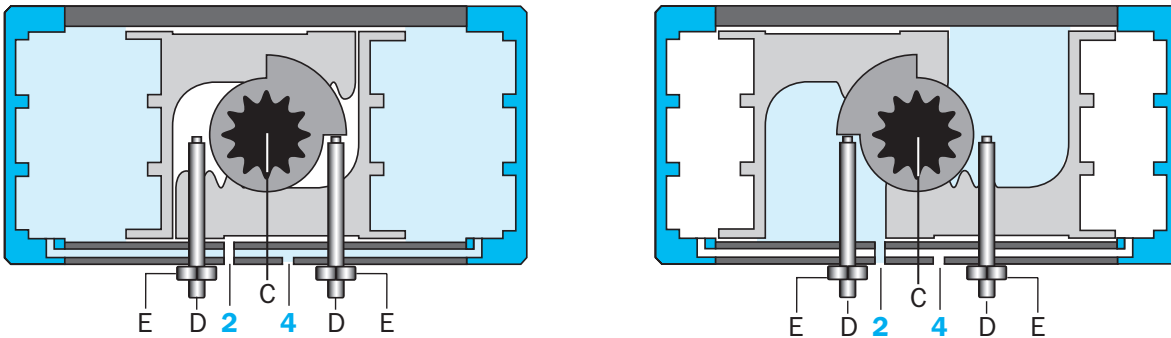
Use

- 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

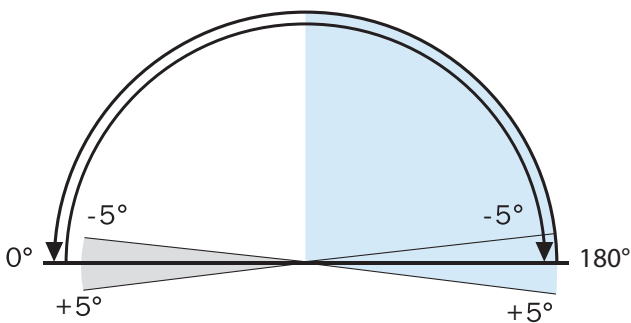
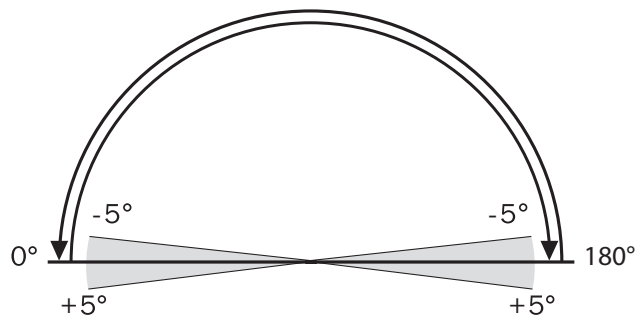
	Standard model	Options available
Construction type	pneumatic twin-piston quarter-turn actuator type GDA = double-acting	
Design features	rack-and-pinion principle with self-centering piston guide in the casing;	
Installation position	any desired	
Standards	connection point actuator signal device: acc. 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 GDA-056 to -216

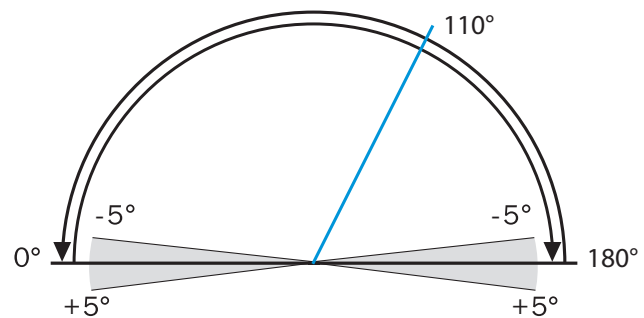


If the two outer chambers are pressurised via connection „4“, the pistons move towards each other into the basic position (0°). The force of both pistons is transmitted to the pinion „C“ via the racks. If connection „2“ is pressurised and connection „4“ is vented, the pistons move apart into the 90°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

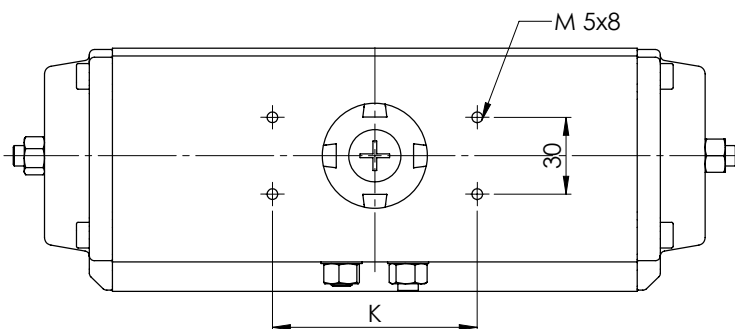
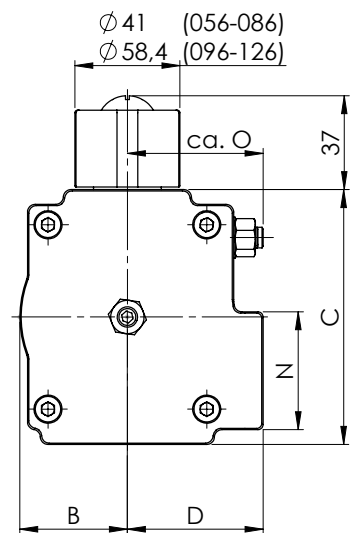
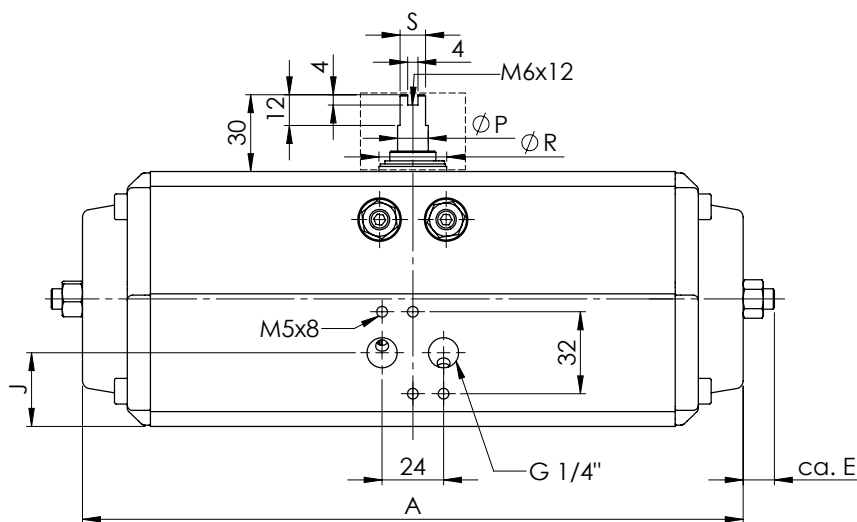
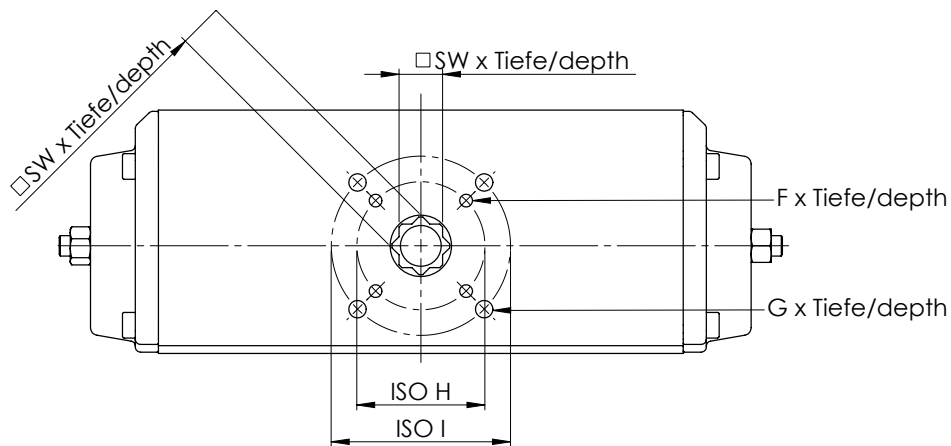
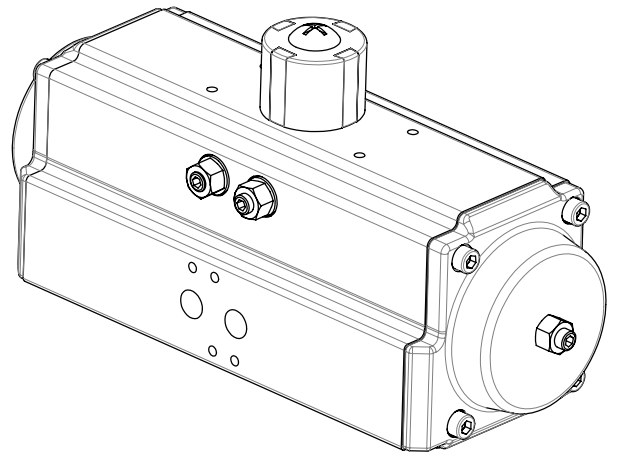


Optional mode of action OA:
External stroke limitation up to 90°



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 GDA-056 to -126



Dimensional drawings for type GDA-146 to -216

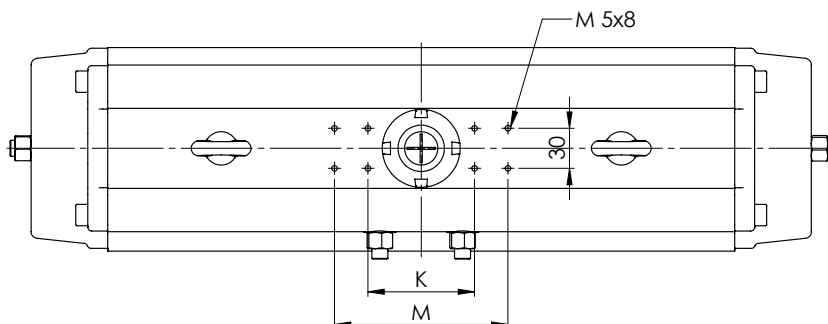
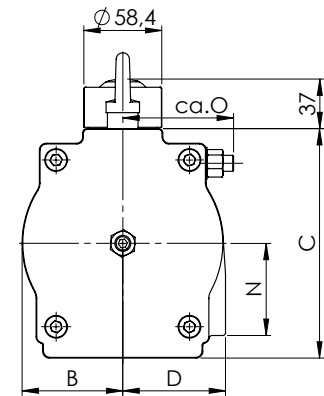
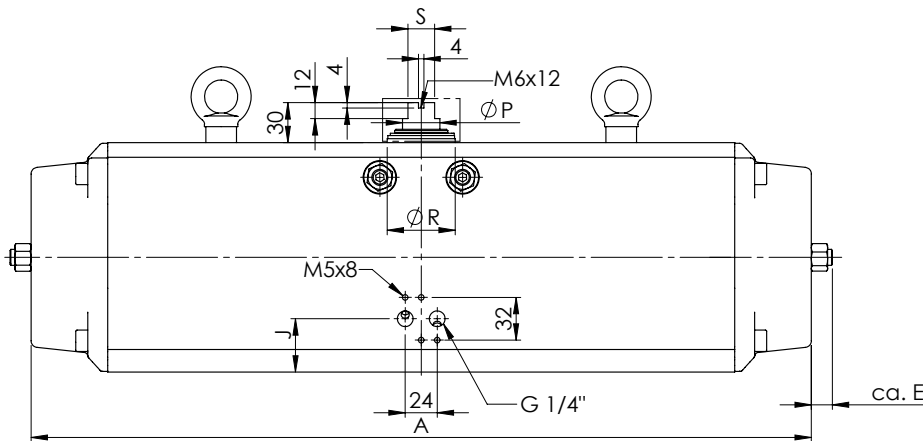
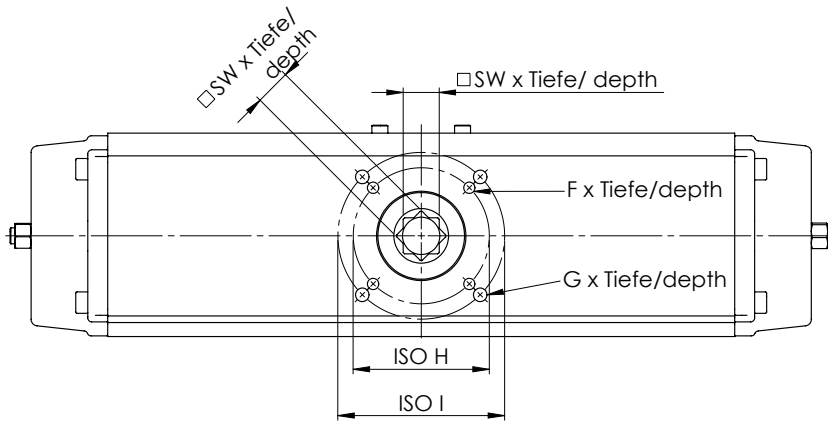
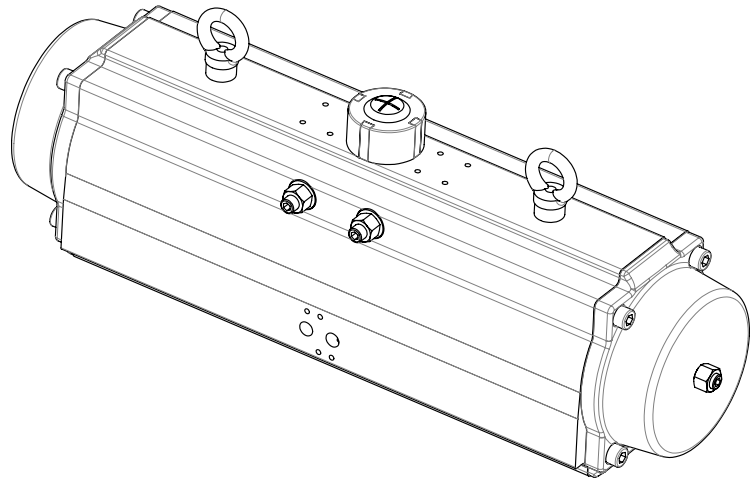


Table of dimensions

Type GDA	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 GDA	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 GDA [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.

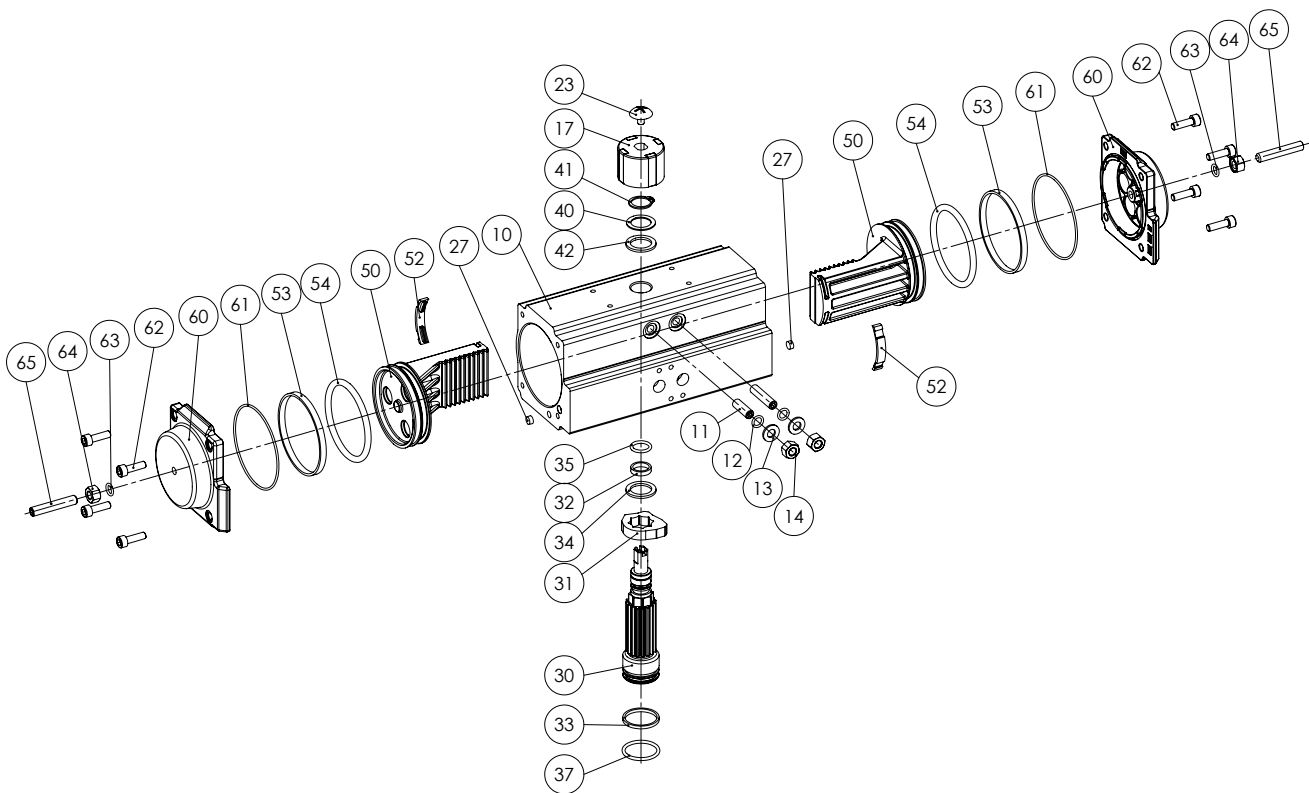
Typ	Pneumatic applied torque Md N [Nm] at minimum control pressure P _{St} [bar]											
	2	2,5	3	3,5	4	4,5	5	5,5	6	7	8	
GDA-056	8	10	12	14	16	18	20	22	24	28	32	
GDA-066	14	18	21	25	28	32	35	39	42	49	56	
GDA-076	20	25	30	35	40	45	50	55	60	70	79	
GDA-086	31	38	46	53	61	69	76	84	92	107	122	
GDA-096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

Components GDA-056/180 – GDA-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 GDA-146 / ** GDA-056 to GDA-126 with cap right and left

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





The descriptions and photographs contained in this product specification sheet are supplied by way of information only and are not binding. CR-TEC Engineering, Inc. reserves the right to carry out any technical and design improvements to its products without prior notice.

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