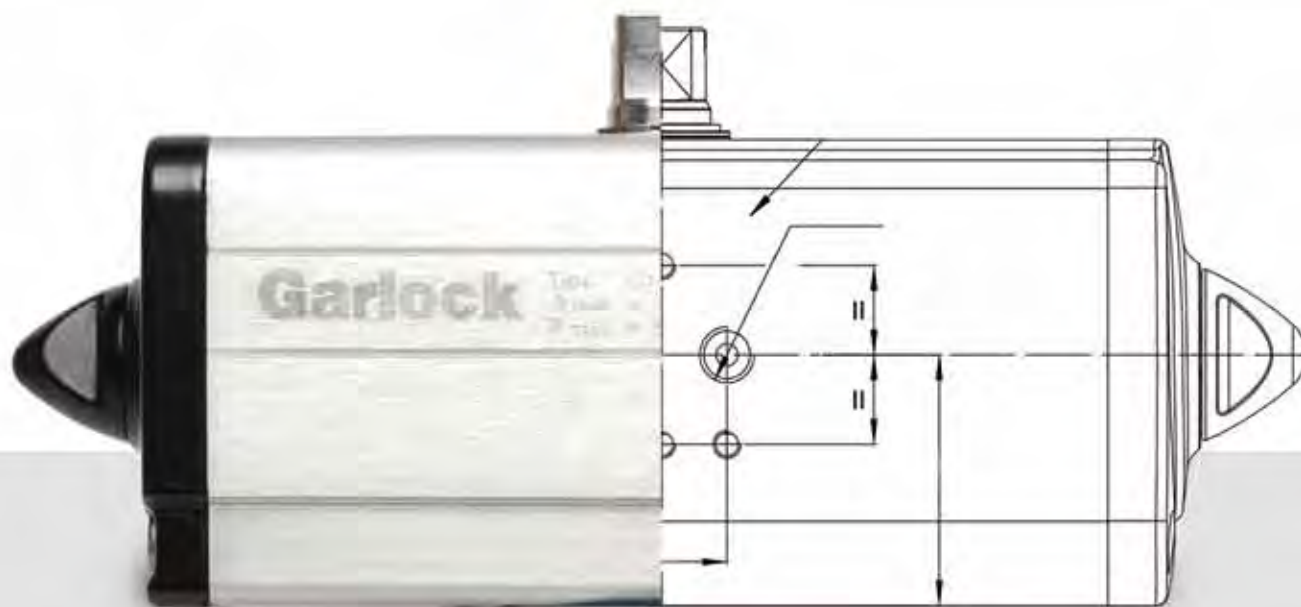


Garlock

Pneumatic Valve Actuators



Garlock
an EnPro Industries family of companies

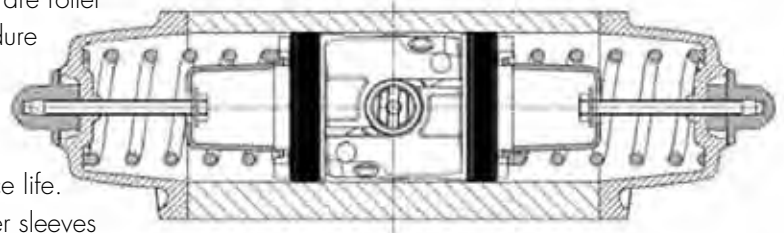
Our Actuator

The Garlock valve actuator includes a pneumatic piston actuating system for valves with 90° rotation. It features a robust anodized aluminum case as standard. Additional coating options such as nickel, PTFE, and epoxy resin are also available for special applications. All external screws and fasteners are made from stainless steel including the spindle. FPM O-rings ensure that the spindle seal is consistently and effectively maintained.

Internal three-bearing aluminum pistons generate the necessary force to provide smooth, positive and reliable actuation. The low-wear piston guide bands are also an important quality feature which reliably seals the pistons even with low levels of frictional resistance.

For all Garlock actuators the sliding surfaces of the pistons are roller burnished to a surface finish of less than 1 µm. This procedure results in an extremely smooth surface which offers an increased bearing area. The surface deformation evens out any abrasive edges in the material and in addition, the surface is cold-formed to promote extremely long service life.

Quality is also a feature of the deflection plate and cylinder sleeves which transmit the linear motion of the pistons to the spindle. These are manufactured from hardened steel which conforms to DIN and ISO standards. This choice of material reduces wear to a minimum.



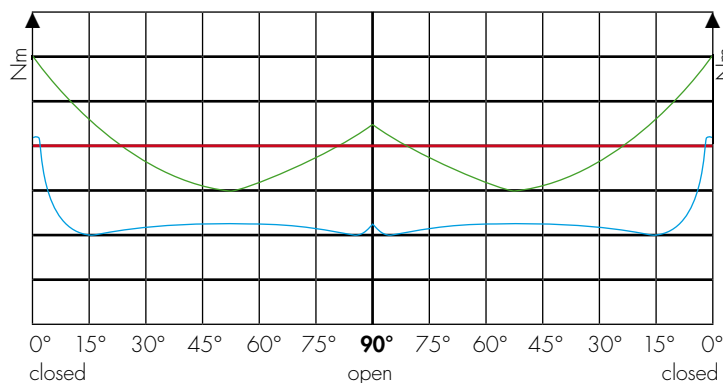
The integral case connection facilitates the direct mounting of Namur control valves without the necessity for additional assembly plates. The combination of these features results in the long and maintenance free service life of Garlock actuators. To highlight confidence in our products Garlock grant a warranty of two million switching cycles* and has conducted tests to validate and exceed the stated performance parameters.

The Scotch-Yoke principle

Garlock actuators use the high-quality Scotch-Yoke principle. In comparison to the rack and pinion principle, it features a torque up to 50% higher in the initial and final phase of the switching cycle, while the compressed air consumption is the same. Since this torque curve is adjusted to the valve, it generally allows for the use of actuators that are one type smaller than otherwise would have been used. It results in a **reduction in dimensions, weight, and compressed air consumption by approx. 30%** on average. The following depictions of torque curves show the difference between the Scotch-Yoke principle and the rack and pinion actuators.

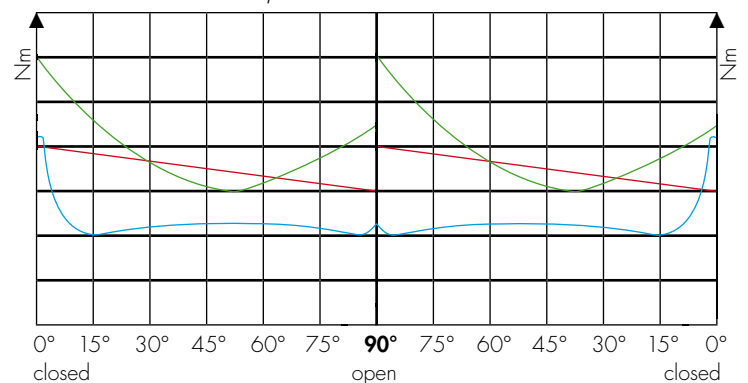
Double action:

GDA (in both directions due to compressed air)



Single action:

GSA (air-actuated in one direction, spring-actuated in the other direction)

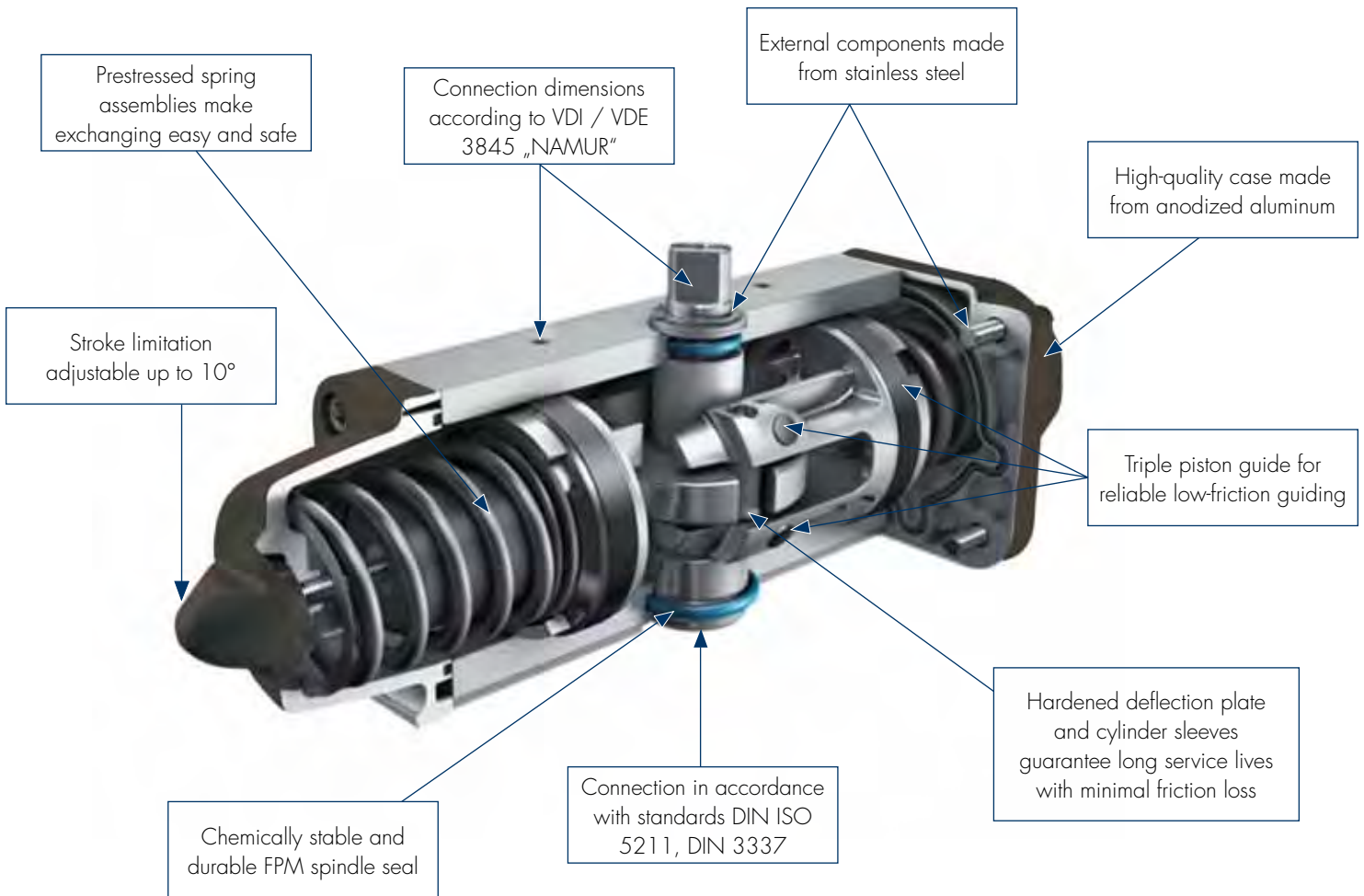


The diagrams show the torque of a Scotch-Yoke actuator (green line) and a rack and pinion actuator (red line) with equal levels of compressed air consumption. The initial torque and final torque of the Scotch-Yoke actuator and the torque curve adapted to the curve shape of a valve (blue line) are clearly visible. For the single-action actuators, the lever arm also affects the torque of the spring return, which is increased again near the final position. The Scotch-Yoke principle thus guarantees increased safety. Since the torque curve of the valves resembles that of other fittings (e.g. ball valve), the Garlock actuator is a good choice for those fittings as well.

*at 20 °C, clean & dry compressed air and 45% of the nominal torque.

Scotch-Yoke: All advantages at a glance!

Namur connection for solenoid valve integrated directly in the case.
No additional Namur assembly plate necessary!



Lower price, weight, and compressed air consumption

Technical Data	
Double action:	7 - 8000 Nm
Single action:	5 - 2600 Nm
Compressed air:	1 - 8.4 bar*
Temperature:	-20 °C to +80 °C
Stroke limitation:	10°
Flange connection:	ISO 5211
Attachments:	VDI/VDE3845



* clean and dry

GDA double action pneumatic valve actuators

Garlock actuators of the GDA type are double action part turn valve actuators for 90° fittings, such as butterfly valves and ball valves. Compressed air is used for actuation in both directions.

The force of the air-actuated pistons is transmitted to the shaft using the Scotch Yoke principle.

In this method, the force is not transmitted using the gears of pistons and spindle but rather by means of a high quality lever arm system. Unlike in the rack and pinion system, the larger lever arm generates a significantly higher torque in the initial and final phases of the rotation, matching the torque curves of the fittings to be actuated.



- Namur hole pattern integrated in the case
- Increased torque
- Torque curve adjusted to fittings
- High-quality, robust aluminum case

Technical Details

Typ	Connection	Operating pressure bar	Ambient temperature °C	Air consumption liters/cycle	Weight kg
GDA08	1/8"	1-8.4	-20 to +80	0.034	0.3
GDA15	1/8"	1-8.4	-20 to +80	0.08	0.7
GDA30	1/8"	1-8.4	-20 to +80	0.15	0.93
GDA60	1/8"	1-8.4	-20 to +80	0.3	1.5
GDA106	1/8"	1-8.4	-20 to +80	0.55	2.3
GDA180	1/8"	1-8.4	-20 to +80	0.95	4.3
GDA240	1/8"	1-8.4	-20 to +80	1.3	5.1
GDA360	1/8"	1-8.4	-20 to +80	1.8	6.2
GDA480	1/4"	1-8.4	-20 to +80	2.6	9
GDA720	1/4"	1-8.4	-20 to +80	3.5	12.2
GDA960	1/4"	1-8.4	-20 to +80	4.9	16.6
GDA1440	1/4"	1-8.4	-20 to +80	7.6	23
GDA1920	1/4"	1-8.4	-20 to +80	10.2	31
GDA2880	3/8"	1-8.4	-20 to +80	20	45
GDA3840	3/8"	1-8.4	-20 to +80	24.3	49
GDA5760	3/8"	1-8.4	-20 to +80	38	80
GDA8000	3/8"	1-7.0	-20 to +80	50	110

Mounting position	any
Rotation angle	90°
Adjustment range	10° of the final position at 0°
Rotation direction	opening to the left
Operating medium	oiled or non-oiled dry compressed air*

*for lubrication, a non-washing oil that is compatible with NBR may be used

Materials	
Case	Aluminum (standard version anodized)
Case lid	Aluminum (standard version anodized and varnished)
Shifter shaft	Stainless steel
Screws in the case	Stainless steel
Seals	NBR, FKM

Connections

Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 80
 Shaft height: 20 mm (*GDA08 15 mm)

Connection DIN ISO 5211	F03	F04	F04	F05	F05	F05	F07	F07
Square	11	11	14	11	14	17	14	17
GDA08*	✓							
GDA15-F04		✓						
GDA30-F03-F05	✓			✓				
GDA30-F04		✓						
GDA60-F04			✓					
GDA60-F05-F07					✓		✓	
GDA106-F05-F07						✓		✓

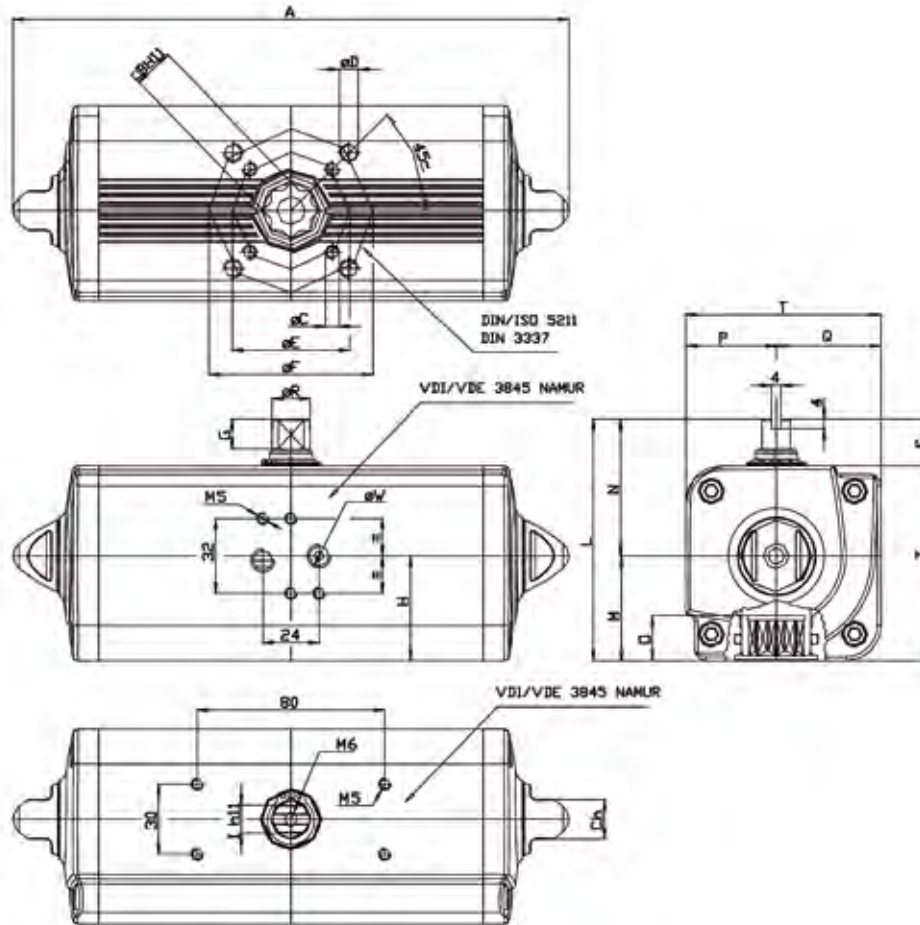
Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 80
 Shaft height: 30 mm

Connection DIN ISO 5211	F07	F10	F10	F12	F12	F12	F14	F14	F16
Square	22	22	27	27	36	46	36	46	46
GDA180-F07-F10	✓	✓							
GDA240-F07-F10	✓	✓							
GDA360-F07-F10	✓	✓							
GDA480-F10-F12			✓	✓					
GDA720-F10-F12			✓	✓					
GDA960-F12					✓				
GDA960-F14							✓		
GDA1440-F12					✓				
GDA1440-F14							✓		
GDA1920-F12-F16						✓			✓
GDA1920-F14								✓	

Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 130
 Shaft height: 30 mm

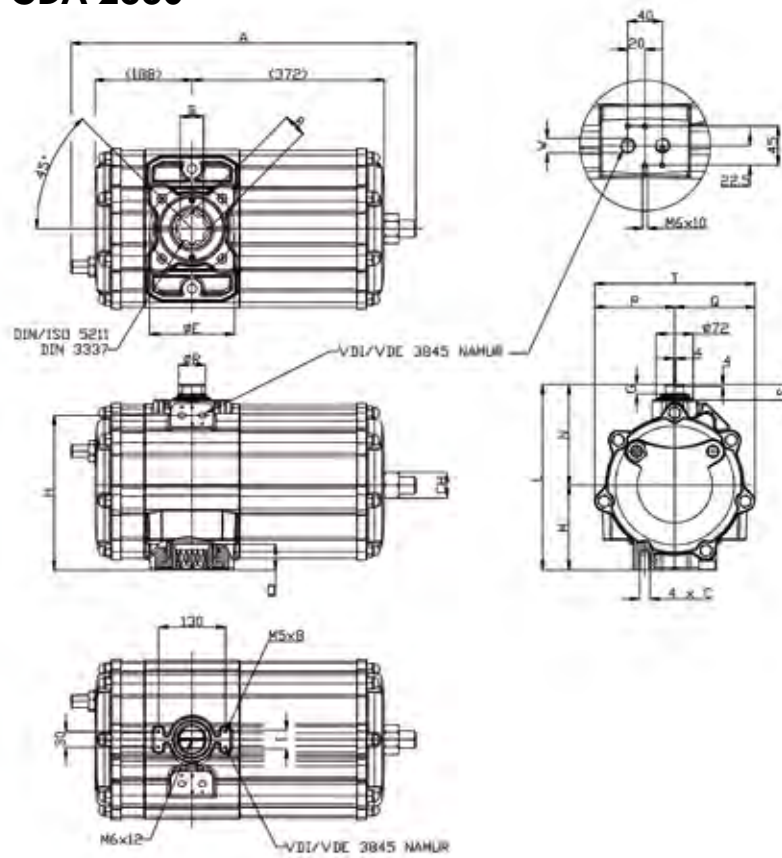
Connection DIN ISO 5211	F16	F25
Square	46	55
GDA2880-F16	✓	
GDA3840-F16	✓	
GDA5760-F25		✓
GDA8000-F25		✓

Dimensions GDA 15 - GDA 1920



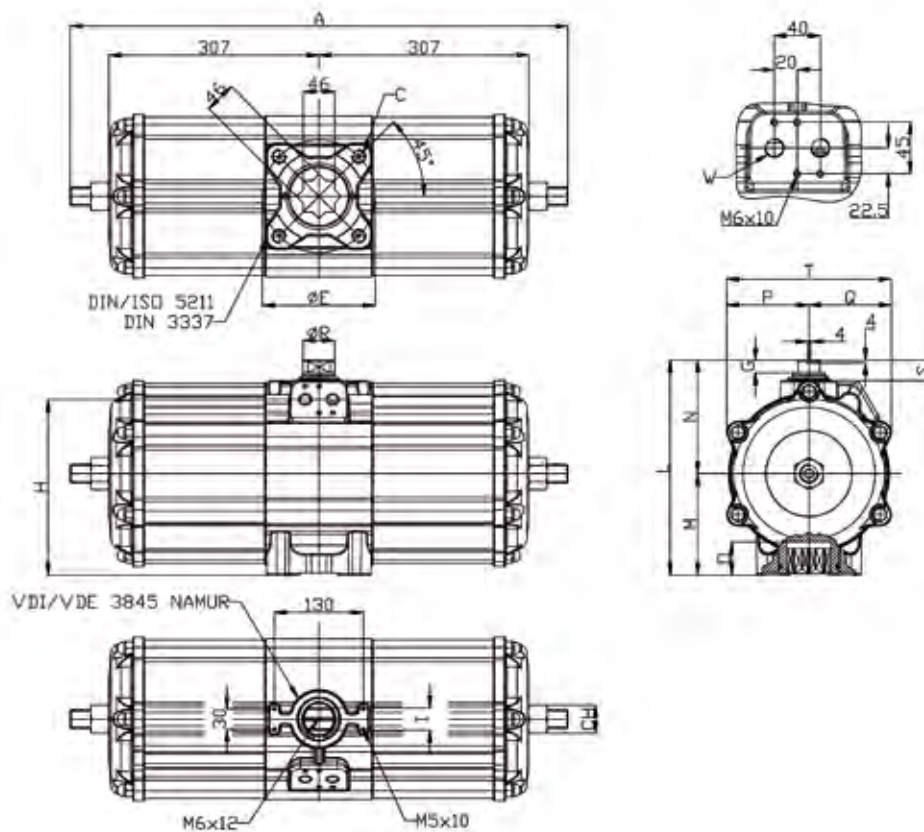
Type	Flange	C x Depth	Dx Depth	E	F	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GDA15 F04	F04	M5x8		42		11	13.2	159	10	28.8	8	72.2	28	44.2	24.2	28	9.2	20	52.2	1/8"	13
GDA30 F03-F05	F03 F05	M5x8	M6x9	36	50	11	13.2	174	10	32.3	9	79.2	31.5	47.7	27.7	31.5	10.9	20	59.2	1/8"	13
GDA30 F04	F04	M5x8		42		11	13.2	174	10	32.3	9	79.2	31.5	47.7	27.7	31.5	10.9	20	59.2	1/8"	13
GDA60 F04	F04	M5x8		42		14	16.5	198	13	37.7	10	90.4	37.7	52.7	32.7	37.7	14.5	20	70.4	1/8"	13
GDA60 F05-F07	F05 F07	M6x9	M8x12	50	70	14	16.5	198	13	37.7	10	90.4	37.7	52.7	32.7	37.7	14.5	20	70.4	1/8"	13
GDA106 F05-F07	F05 F07	M6x9	M8x12	50	70	17	19.3	237.1	13	44.8	12	103.3	44.8	58.5	38.5	44.8	16.2	20	83.3	1/8"	17
GDA180 F07-F10	F07 F10	M8x12	M10x15	70	102	22	24.8	289.9	16	56.5	15	137.5	56.5	81	51	56.5	20.2	30	107.5	1/8"	22
GDA240 F07-F10	F07 F10	M8x12	M10x15	70	102	22	24.8	313.6	17	60.1	15	141.1	60.1	81	51	60.1	22.5	30	111.1	1/8"	22
GDA360 F07-F10	F07 F10	M8x10	M10x15	70	102	22	24.3	339.3	19	62	19	148	62	86	56	62	25.5	30	118	1/8"	22
GDA480 F10-F12	F10 F12	M10x15	M12x18	102	125	27	29.5	387.7	19	57.4	19	164.9	72.9	92	62	72.9	29	30	134.9	1/4"	27
GDA720 F10-F12	F10 F12	M10x15	M12x18	102	125	27	29.5	433	19.5	61.5	22	178	78.5	99.5	69.5	78.5	31.8	30	148	1/4"	27
GDA960 F12	F12	M12x18		125		36	38.5	479.4	19.5	78	24	198	93.5	104.5	74.5	93.5	36.5	30	168	1/4"	27
GDA960 F14	F14	M16x24		140		36	38.5	479.4	19.5	78	24	198	93.5	104.5	74.5	93.5	36.5	30	168	1/4"	27
GDA1440 F12	F12	M12x18		125		36	38.5	567	19.5	86.5	27	186	101.5	114.5	84.5	101.5	41	30	186	1/4"	36
GDA1440 F14	F14	M16x24		140		36	38.5	567	19.5	86.5	27	186	101.5	114.5	84.5	101.5	41	30	186	1/4"	36
GDA1920 F12-F16	F12 F16	M12x18	M20x30	125	165	46	48.5	601	18.5	99.2	32	237.7	114.7	123	93	114.7	46	30	207.7	1/4"	36
GDA1920 F14	F14	M16x24		140		46	48.5	601	18.5	99.2	32	237.7	114.7	123	93	114.7	46	30	207.7	1/4"	36

Dimensions GDA 2880



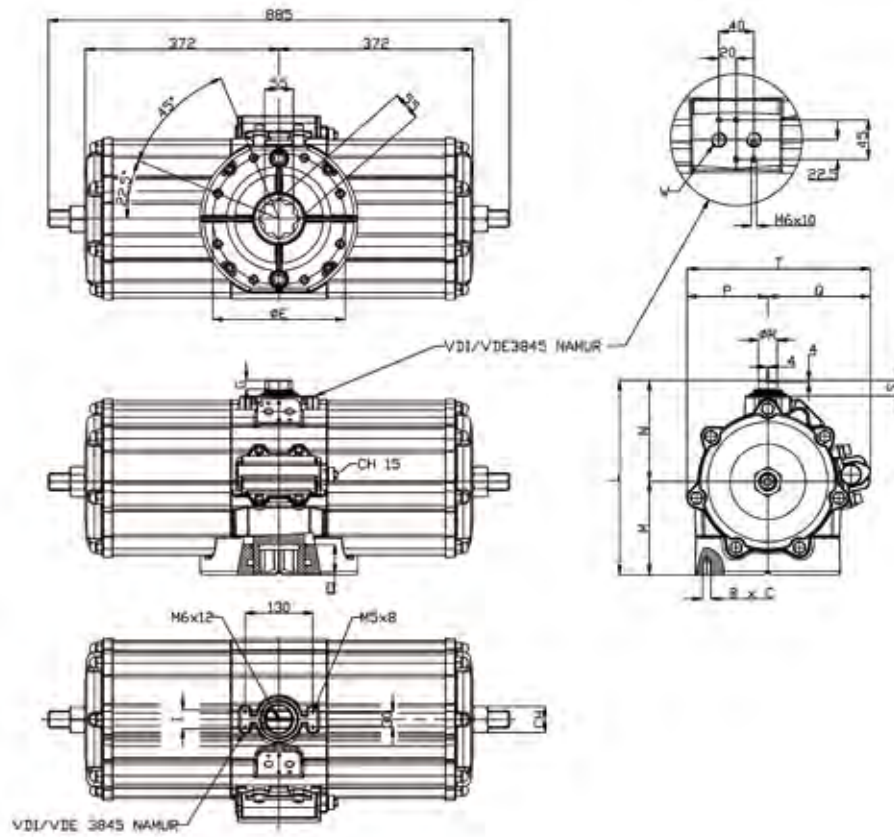
Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GDA 2880 F16	F16	M20x30	165	46	49.5	667	18	299	36	359	164	195	155.5	155.5	52	30	311	3/8"	50

Dimensions GDA 3840



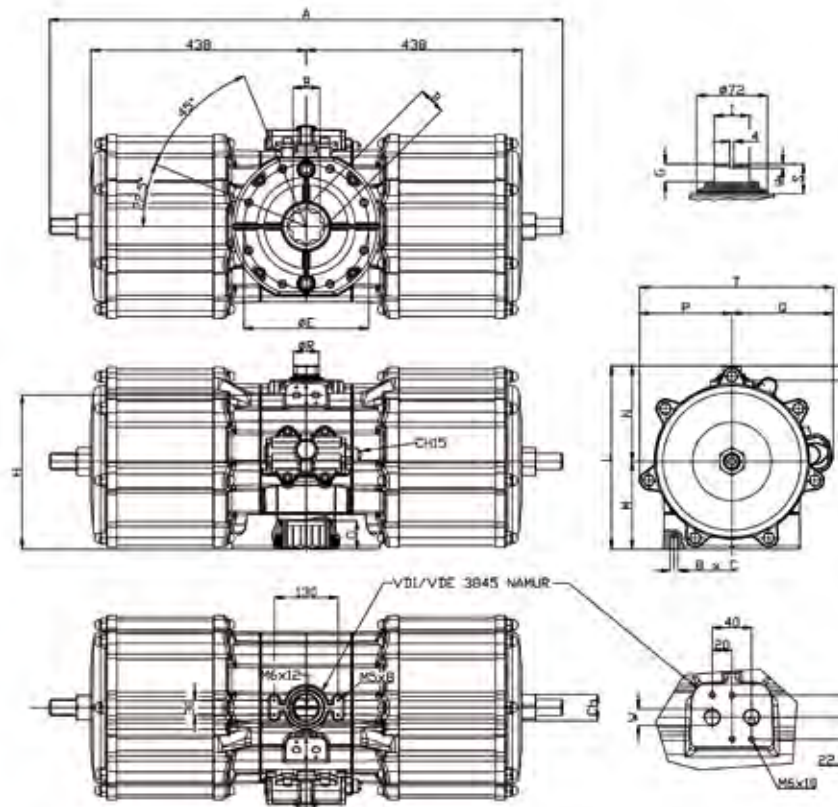
Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GDA 3840 F16	F16	M20x30	165	46	50.5	718	18.5	257	32	314.5	148.5	166	120.4	120.4	46	30	240.8	3/8"	41

Dimensions GDA 5760



Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GDA 5760 F25	F25	M16x24	254	55	58	885	18	314	36	374	179	195	155	206	52	30	361	3/8"	50

Dimensions GDA 8000



Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GDA 8000 F25	F25	M16x24	254	55	58	1044	18	314	36	374	179	195	188	206	52	30	394	3/8"	50

Torque [Nm]

Torque chart for double-action actuators depending on operating pressure and rotation angle.

Type	Rotation angle in°	Operating pressure in bar							
		2.5	3	4	5	5.6	6	7	8
GDA08	0	3.1	3.8	5	6.3	7	7.5	8.8	10
	50	1.6	1.9	2.5	3.1	3.5	3.8	4.4	5
	90	3.1	3.8	5	6.3	7	7.5	8.8	10
GDA15	0	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	50	3.3	4	5.4	6.7	7.5	8	9.4	10.7
	90	5	6.1	8.1	10.1	11.3	12.1	14.1	16.1
GDA30	0	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	50	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	90	10	12.1	16.1	20.1	22.5	24.1	28.1	32.1
GDA60	0	26.8	32.1	42.9	53.6	60	64.3	75	85.7
	50	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	90	20.1	24.1	32.1	40.2	45	48.2	56.3	64.3
GDA106	0	47.3	56.8	75.7	94.6	106	113.6	132.5	151.4
	50	23.7	27.4	37.9	47.3	53	56.8	66.3	75.7
	90	35.7	42.9	57.1	71.4	80	85.7	100	114.3
GDA180	0	80.4	96.4	128.6	160.7	180	192.9	225	257.1
	50	40.2	48.2	64.3	80.4	90	96.4	112.5	128.6
	90	60.3	72.3	96.4	120.5	135	144.6	168.8	192.9
GDA240	0	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	50	53.6	64.3	85.7	107.1	120	128.6	150	171.4
	90	80.4	96.4	128.6	160.7	180	192.9	225	257.1
GDA360	0	160.7	192.9	257.1	321.4	260	385.7	450	514.3
	50	80.4	96.4	128.6	160.7	180	192.9	225	257.1
	90	120.5	144.6	192.9	241.1	270	289.3	337.5	385.7
GDA480	0	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	50	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	90	160.7	192.9	257.1	321.4	360	385.7	450	514.3
GDA720	0	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
	50	160.7	192.9	257.1	321.4	360	385.7	450	514.3
	90	241.1	289.3	385.7	482.1	540	578.6	675	771.4
GDA960	0	428.6	514.3	685.7	857.1	960	1028.6	1200	1371.4
	50	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	90	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
GDA1440	0	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1
	50	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
	90	482.1	578.6	771.4	964.3	1080	1157.1	1350	1542.9
GDA1920	0	857.1	1028.6	1371.4	1714.3	1920	2057.1	2400	2742.9
	50	428.6	514.3	685.7	857.1	960	1028.6	1200	1371.4
	90	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1
GDA2880	0	1285.7	1542.9	2057.1	2571.4	2880	3085.7	3600	4114.3
	50	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1
	90	964.3	1157.1	1542.9	1928.6	2160	2314.3	2700	3085.7
GDA3840	0	1714.3	2057.1	2742.9	3428.6	3840	4114.3	4800	5485.7
	50	857.1	1028.6	1371.4	1714.3	1920	2057.1	2400	2742.9
	90	1285.7	1542.9	2057.1	2571.4	2880	3085.7	3600	4114.3
GDA5760	0	2571.4	3085.7	4114.3	5142.9	5760	6171.4	7200	8228.6
	50	1285.7	1542.9	2057.1	2571.4	2880	3085.7	3600	4114.3
	90	1928.6	2314.3	3085.7	3857.1	4320	4628.6	5400	6171.4
GDA8000	0	3571.4	4285.7	5714.3	7142.9	8000	8571.4	10000	X
	50	1785.7	2142.9	2857.1	3571.4	4000	4285.7	5000	X
	90	2678.6	3214.3	4285.7	5357.1	6000	6428.6	7500	X

GSA single action pneumatic valve actuators

Garlock actuators of the GSA type are single action part turn valve actuators for 90° fittings, such as butterfly valves and ball valves.

Compressed air is used for actuation in one direction, while spring force is used for actuation in the other direction. The force of the air-actuated pistons is transmitted to the shaft using the Scotch Yoke principle.

In this method, the force is not transmitted using the gears of pistons and spindle but rather by means of a high quality lever arm system. Unlike in the rack and pinion system, the larger lever arm generates a significantly higher torque in the initial and final phases of the rotation, matching the torque curves of the fittings to be actuated. The same applies to the spring force, which is the highest in the initial and final phases of the rotation.

The mounted spring sets can be recognized from the exterior by their formed end caps. This is how a single action actuator can be identified at first sight. The spring assemblies are mounted in a prestressed manner.



- Significantly higher torque in the initial and final phases of the rotation
- No risk of injury during dismantling due to prestressed spring assemblies
- Namur hole pattern integrated in the case
- Increased torque
- Torque curve adjusted to fittings
- High-quality, robust aluminum case

Technical details

Type	Connec-tion	Operating pressure bar	Ambient temperature °C	Air consumption liters/cycle	Weight kg
GSA15	1/8"	2.4-8.4	-20 to +80	0.09	1.2
GSA30	1/8"	2.4-8.4	-20 to +80	0.17	1.8
GSA53	1/8"	2.4-8.4	-20 to +80	0.3	2.85
GSA90	1/8"	2.4-8.4	-20 to +80	0.55	5.6
GSA120	1/8"	2.4-8.4	-20 to +80	0.8	6.5
GSA180	1/8"	2.4-8.4	-20 to +80	1	8.5
GSA240	1/4"	2.4-8.4	-20 to +80	1.5	11.4
GSA360	1/4"	2.4-8.4	-20 to +80	2	16.4
GSA480	1/4"	2.4-8.4	-20 to +80	2.8	22.2
GSA720	1/4"	2.4-8.4	-20 to +80	4.2	32
GSA960	1/4"	2.4-8.4	-20 to +80	5.9	41
GSA1440	3/8"	2.4-8.4	-20 to +80	11	60
GSA1920	3/8"	2.4-8.4	-20 to +80	12.5	67
GSA2880	3/8"	2.4-8.4	-20 to +80	21	105
GSA4000	3/8"	2.4-8.4	-20 to +80	29.1	130

Mounting position	any
Rotation angle	90°
Adjustment range	10° of the final position at 0°
Rotation direction	opening to the left
Operating medium	oiled or non-oiled dry compressed air*

*for lubrication, a non-washing oil that is compatible with NBR may be used

Materials	
Case	Aluminum (standard version anodized)
Case lid	Aluminum (standard version anodized and varnished)
Shifter shaft	Stainless steel
Screws in the case	Stainless steel
Seals	NBR, FKM

Connections

Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 80
 Shaft height: 20 mm

Connection DIN ISO 5211	F03	F04	F04	F05	F05	F05	F07	F07
Square	11	11	14	11	14	17	14	17
GSA15-F03-F05	✓			✓				
GSA15-F04		✓						
GSA30-F04			✓					
GSA30-F05-F07					✓		✓	
GSA53-F05-F07						✓		✓

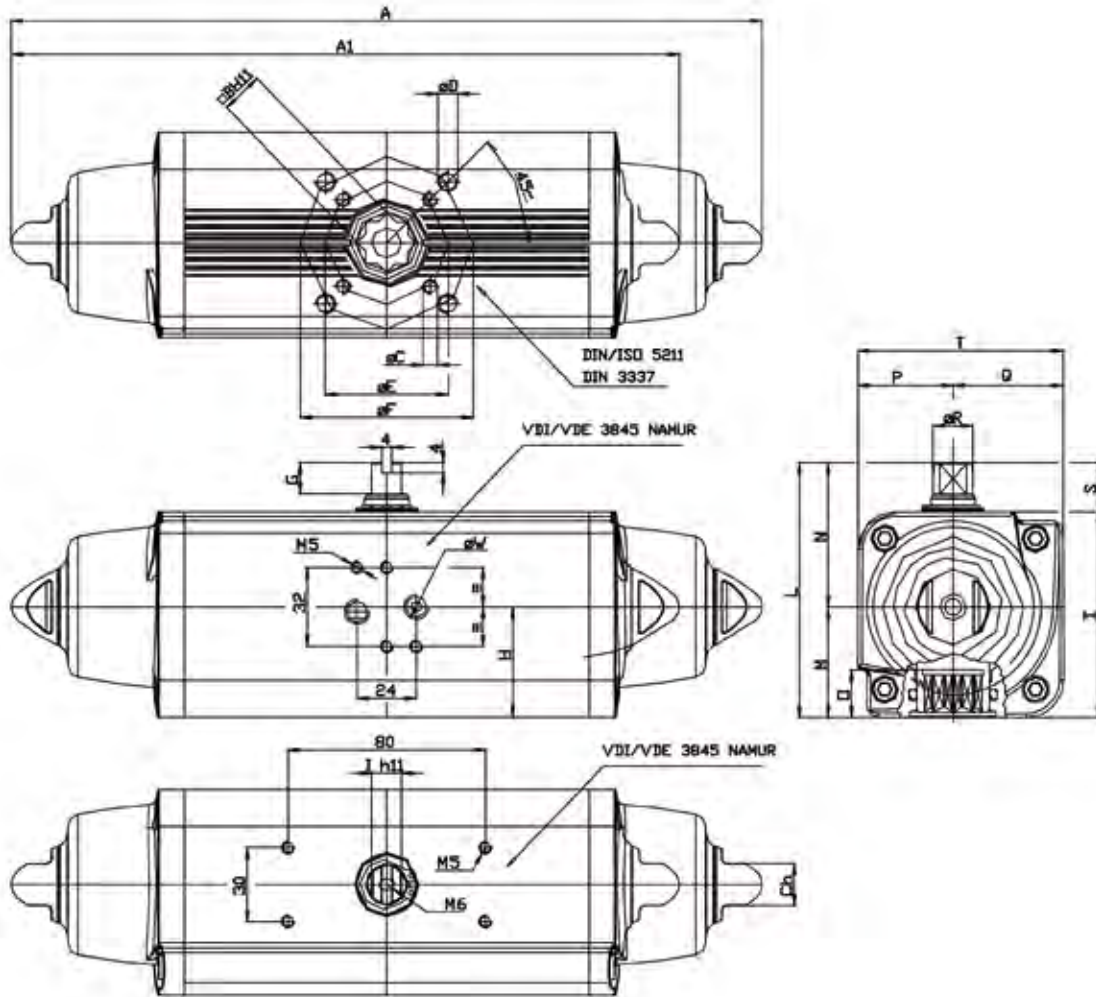
Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 80
 Shaft height: 30 mm

Connection DIN ISO 5211	F07	F10	F10	F12	F12	F12	F14	F14	F16
Square	22	22	27	27	36	46	36	46	46
GSA90-F07-F10	✓	✓							
GSA120-F07-F10	✓	✓							
GSA180-F07-F10	✓	✓							
GSA240-F10-F12			✓	✓					
GSA360-F10-F12			✓	✓					
GSA480-F12					✓				
GSA480-F14							✓		
GSA720-F12					✓				
GSA720-F14							✓		
GSA960-F12-F16									✓
GSA960-F14								✓	

Flange connection according to ISO 5211 / DIN 3337
 Connection for control valves according to VDI/VDE 3845 Namur
 Hole pattern according to VDI/VDE 3845 Namur: 30 / 130
 Shaft height: 30 mm

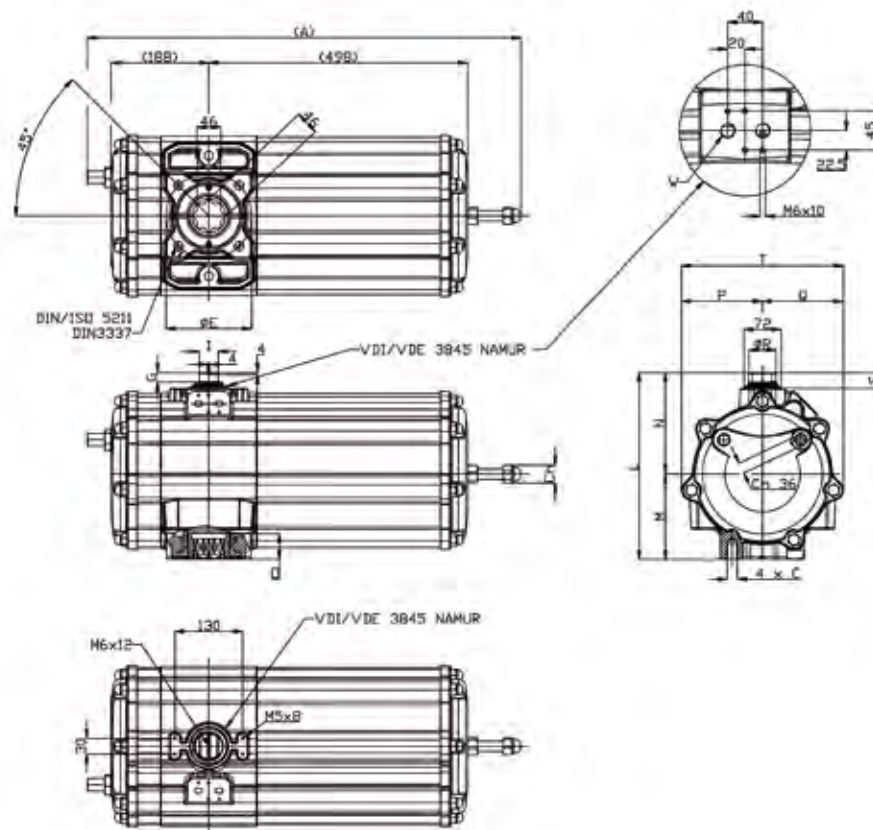
Connection DIN ISO 5211	F16	F25
Square	46	55
GSA1440-F16	✓	
GSA1920-F16	✓	
GSA2880-F16	✓	
GSA4000-F25		✓

Dimensions GSA 15 - GSA 960



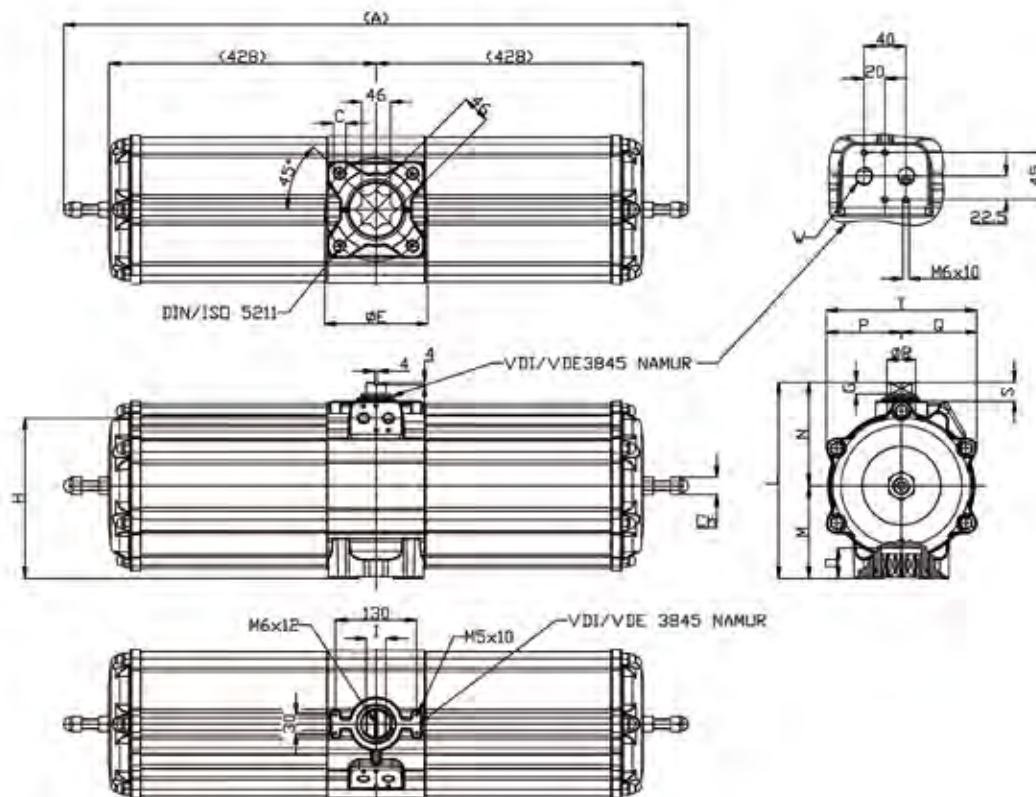
Type	Flange	C x Depth	D x Depth	E	F	B	O	A*	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GSA15 F03-F05	F03 F05	M5x8	M6x9	36	50	11	13.2	233.3	10	32.3	9	79.2	31.5	47.7	27.7	31.5	10.9	20	59.2	1/8"	13
GSA15 F04	F04	M5x8			42	11	13.2	233.3	10	32.3	9	79.2	31.5	47.7	27.7	31.5	10.9	20	59.2	1/8"	13
GSA30 F04	F4	M5x8			42	14	16.5	259	13	37.7	10	90.4	37.7	52.7	32.7	37.7	14.5	20	70.4	1/8"	13
GSA30 F05-F07	F05 F07	M6x9	M8x12	50	70	14	16.5	259	13	37.7	10	90.4	37.7	52.7	90.4	32.7	14.5	20	70.4	1/8"	13
GSA53 F05-F07	F05 F07	M6x9	M8x12	50	70	17	19.3	304.5	13	44.8	12	103.3	44.8	58.5	38.5	44.8	16.2	20	83.3	1/8"	17
GSA90 F07-F10	F05 F10	M8x12	M10x15	70	102	22	24.8	393.7	16	56.5	15	137.5	56.5	81	51	56.5	20.2	30	107.5	1/8"	22
GSA120 F07-F10	F07 F10	M8x12	M10x15	70	102	22	24.8	409.6	17	60.1	15	141.1	60.1	81	51	60.1	22.5	30	111.1	1/8"	22
GSA180 F07-F10	F07 F10	M8x12	M10x15	70	102	22	24.3	474	19	62	19	148	62	86	56	62	25.5	30	118	1/8"	22
GSA240 F10-F12	F10 F12	M10x15	M12x18	102	125	27	29.5	520.5	19	57.4	19	164.9	72.9	92	62	72.9	29	30	134.9	1/4"	27
GSA360 F10-F12	F10 F12	M10x15	M12x18	102	125	27	29.5	613	19.5	61.5	22	178	78.5	99.5	69.5	78.5	31.8	30	148	1/4"	27
GSA480 F12	F12	M12x18			125	36	38.5	648.2	19.5	78	24	198	93.5	104.5	74.5	93.5	36.5	30	168	1/4"	27
GSA480 F14	F14	M16x27			140	36	38.5	648.2	19.5	78	24	198	93.5	104.5	74.5	93.5	36.5	30	168	1/4"	27
GSA720 F12	F12	M12x18			125	36	38.5	798	19.5	86.5	27	186	101.5	114.5	84.5	101.5	41	30	186	1/4"	36
GSA720 F14	F4	M16x24			140	36	38.5	798	19.5	86.5	27	186	101.5	114.5	84.5	101.5	41	30	186	1/4"	36
GSA960 F12-F16	F12 F16	M12x18	M20x30	125	165	46	48.5	828	18.5	99.2	32	237.7	114.7	123	93	114.7	46	30	207.7	1/4"	36
GSA960 F14	F14	M16x24			140	46	48.5	828	18.5	99.2	32	237.7	114.7	123	93	114.7	46	30	207.7	1/4"	36

Dimensions GSA 1440



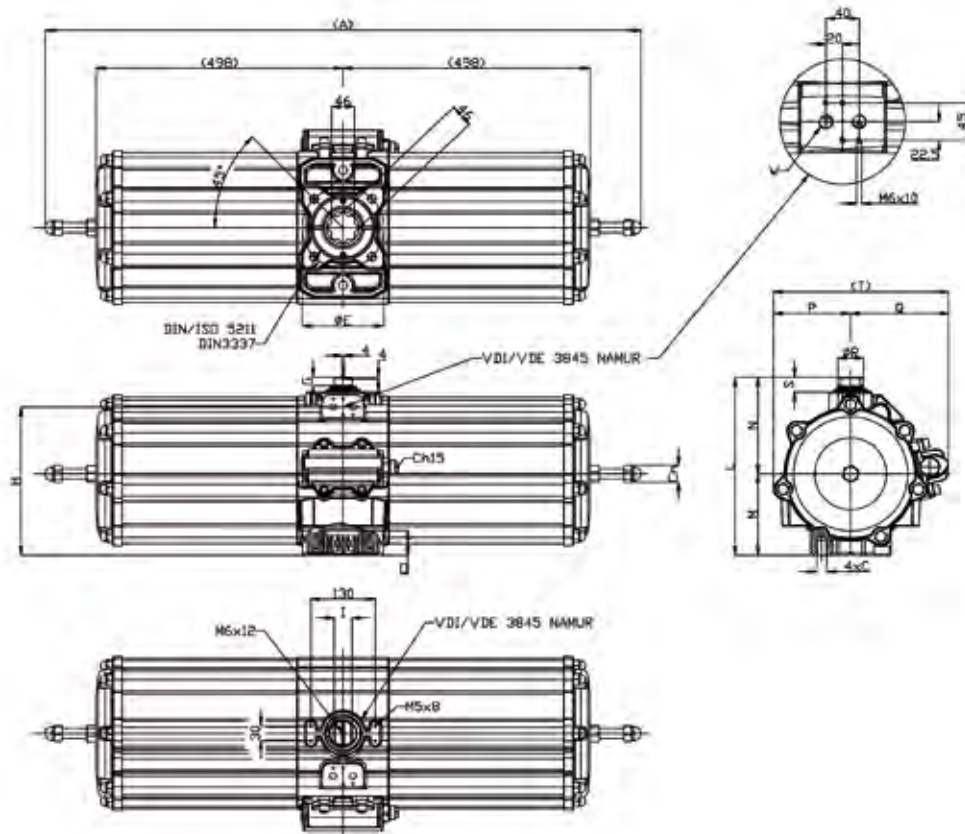
Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GSA 1440 F16	F16	M20x30	165	46	49.5	834	18	299	36	359	164	195	155.5	155.5	52	30	311	3/8"	30

Dimensions GSA 1920



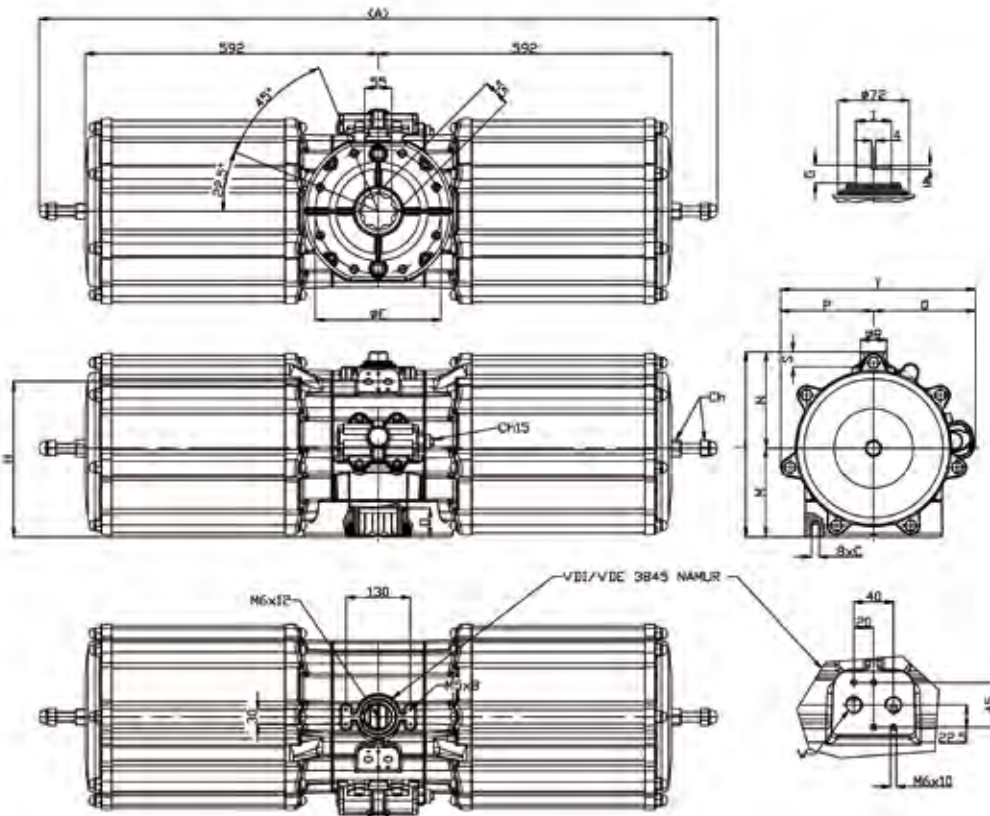
Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GSA 1920 F16	F16	M20x30	165	46	50.5	1001	18.5	257	32	314.5	148.5	166	120.4	120.4	46	30	270.8	3/8"	24

Dimensions GSA 2880



Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GSA 2880 F16	F16	M20x30	165	46	49.5	1201	18	299	36	359	164	195	155	206	52	30	361	3/8"	30

Dimensions GSA 4000



Type	Flange	C x Depth	E	B	O	A	G	H	I	L	M	N	P	Q	R	S	T	W	Ch
GSA 4000 F25	F25	M16x24	254	55	58	1370	18	314	36	374	179	195	188	206	52	30	394	3/8"	30

Torque [Nm]

Torque charts for single-action actuators depending on operating pressure and rotation angle.

Type Spring assembly*		Spring torque Nm			Operating pressure in bar														
					2.4			2.8			3			3.5			4.2		
		0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
GSA15	2.8	5	3.7	7.5	5.7	2.6	3.2	7.5	3.7	5	8.4	4.2	5.9	10.6	5.6	8.1	13.8	7.4	11.3
	3.5	6.3	4.7	9.4							7.2	3.3	4	9.4	4.7	6.3	12.6	6.5	9.4
	4.2	7.5	5.6	11.3										8.2	3.7	4.4	11.3	5.6	7.5
	5.6	10	7.5	15															
GSA30	2.8	10	7.5	15	11.4	5.4	6.4	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	27.5	15	22.5
	3.5	12.5	9.4	18.8							14.3	6.7	8	18.8	9.4	12.5	25.1	13.2	18.8
	4.2	15	11.3	22.5										16.3	7.5	8.8	22.5	11.3	15
	5.6	20	15	30															
GSA53	2.8	17.5	13	26.5	20.2	9.3	11.2	26.5	13	17.5	29.6	14.9	20.6	37.5	19.5	28.5	48.5	26	39.5
	3.5	22	16.5	33							25.1	11.8	14.1	33	16.5	22	44	23.1	33
	4.2	26	19.5	40										29	13	15	40	19.5	26
	5.6	35	26	53															
GSA90	2.8	30	22.5	45	34.3	16.1	19.3	45	22.5	30	50.4	25.7	35.4	63.8	33.8	48.8	82.5	45	67.5
	3.5	37.5	28.1	56.3							42.9	20.1	24.1	56.3	28.1	37.5	75.1	39.4	56.3
	4.2	45	33.9	67.5										48.8	22.6	26.3	67.5	33.9	45
	5.6	60	45	90															
GSA120	2.8	40	30	60	45.7	21.4	25.7	60	30	40	67.1	34.3	47.1	85	45	65	110	60	90
	3.5	50	37.5	75							57.1	26.8	32.1	75	37.5	50	100	52.5	75
	4.2	60	45	90										65	30	35	90	45	60
	5.6	80	60	120															
GSA180	2.8	60	45	90	68.6	32.1	38.6	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	165	90	135
	3.5	75	56.3	112.5							85.7	40.2	48.2	112.5	56.3	75	150	78.8	112.5
	4.2	90	67.5	135										97.5	45	52.5	135	67.5	90
	5.6	120	90	180															
GSA240	2.8	80	60	120	91.4	42.9	51.4	120	60	80	134.3	68.6	94.3	170	90	130	220	120	180
	3.5	100	75	150							114.3	53.6	64.3	150	75	100	200	105	150
	4.2	120	90	180										130	60	70	180	90	120
	5.6	160	120	240															
GSA360	2.8	120	90	180	137.1	64.3	77.1	180	90	120	201.4	102.9	141.4	255	135	195	330	180	270
	3.5	150	112.5	225							171.4	80.4	96.4	225	112.5	150	300	157.5	225
	4.2	180	135	270										195	90	105	270	135	180
	5.6	240	180	360															
GSA480	2.8	160	120	240	182.9	85.7	102.9	240	120	160	268.6	137.1	188.6	340	180	260	440	240	360
	3.5	200	150	300							228.6	107.1	128.6	300	150	200	400	210	300
	4.2	240	180	360										260	120	140	360	180	240
	5.6	320	240	480															
GSA720	2.8	240	180	360	274.3	128.6	154.3	360	180	240	402.9	205.7	282.9	510	270	390	660	360	540
	3.5	300	225	450							342.9	160.7	192.9	450	225	300	600	315	450
	4.2	360	270	540										390	180	210	540	270	360
	5.6	480	360	720															
GSA960	2.8	320	240	480	366	171	206	480	240	320	537	274	377	680	360	520	880	480	720
	3.5	400	300	600							457	214	257	600	300	400	800	420	600
	4.2	480	360	720										520	240	280	720	360	480
	5.6	640	480	960															
GSA1440	2.4	411	308	617	617	308	411	788	411	582	874	462	668	1088	590	882	1388	770	1182
	3.5	600	450	900							686	321	386	900	450	600	1200	630	900
	5.6	960	720	1440															
GSA1920	2.8	640	480	960	731	343	411	960	480	640	1074	549	754	1360	720	1040	1760	960	1440
	3.5	800	600	1200							914	429	514	1200	600	800	1600	840	1200
	4.2	960	720	1440										1040	480	560	1440	720	960
	5.6	1280	960	1920															
GSA2880	2.8	960	720	1440	1097	514	617	1440	720	960	1611	823	1131	2040	1080	1560	2640	1440	2160
	3.5	1200	900	1800							1371	643	771	1800	900	1200	2400	1260	1800
	4.2	1440	1080	2160										1560	720	840	2160	1080	1440
	5.6	1920	1440	2880															
GSA4000	2.8	1333	1000	2000	1524	714	857	2000	1000	1333	2238	1143	1571	2833	1500	2166	3666	2000	2999
	3.5	1666	1250	2500							1905	893	1071	2500	1250	1666	3333	1750	2499
	4.2	1999	1500	3000										2167	1000	1166	3000	1500	1999
	5.6	2666	2000	4000															

*spring set 2.8 includes spring assembly

Torque [Nm]

Type Spring assembly*		Spring torque Nm			Operating pressure in bar														
					5			5.6			6			7			8		
		0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
GSA15	2.8	5	5	7.5															
	3.5	6.3	6.3	9.4	16.1	8.7	15.7	18.8	10.3	15.7									
	4.2	7.5	7.5	11.3	14.9	7.7	13.8	17.6	9.3	13.8	19.4	10.4	15.6	23.8	13.1	20	28.3	15.7	24.5
	5.6	10	10	15	12.3	5.9	10	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	25.7	13.9	20.7
GSA30	2.8	10	7.5	15															
	3.5	12.5	9.4	18.8	32.2	17.5	31.2	37.6	20.7	31.3									
	4.2	15	11.3	22.5	29.6	15.6	27.5	35	18.8	27.5	38.6	21	31.1	47.5	26.4	40	56.4	31.7	48.9
	5.6	20	15	30	24.6	11.8	20	30	15	20	33.6	17.1	23.6	42.5	22.5	32.5	51.4	27.9	41.4
GSA53	2.8	17.5	13	26.5															
	3.5	22	16.5	33	56.6	30.6	45.6	66	36.3	55									
	4.2	26	19.5	40	52.6	26.9	38.6	62	32.5	48	68.3	36.2	54.3	84	45.5	70	99.7	54.8	85.7
	5.6	35	26	53	43.6	20.4	25.6	53	26	35	59.3	29.7	41.3	75	39	57	90.7	48.3	72.7
GSA90	2.8	30	22.5	45															
	3.5	37.5	28.1	56.3	96.5	52.2	77.7	112.6	61.9	93.8									
	4.2	45	33.9	67.5	88.9	46.8	66.4	105	56.5	82.5	115.7	63	93.2	142.5	79.1	120	169.3	95.2	146.8
	5.6	60	45	90	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	154.3	83.6	124.3
GSA120	2.8	40	30	60															
	3.5	50	37.5	75	128.6	69.6	77.7	150	82.5	125									
	4.2	60	45	90	118.6	62.1	66.4	140	75	110	154.3	83.6	124.3	190	105	160	225.7	126.4	195.7
	5.6	80	60	120	98.6	47.1	43.9	120	60	80	134.3	68.6	94.3	170	90	130	205.7	111.4	165.7
GSA180	2.8	60	45	90															
	3.5	75	56.3	112.5	192.9	104.5	103.6	225	123.8	187.5									
	4.2	90	67.5	135	177.9	93.2	88.6	210	112.5	165	231.4	125.4	186.4	285	157.5	240	338.6	189.6	293.6
	5.6	120	90	180	147.9	70.7	58.6	180	90	120	201.4	102.9	141.4	255	135	195	308.6	167.1	248.6
GSA240	2.8	80	60	120															
	3.5	100	75	150	257.1	139.3	188.4	300	165	250									
	4.2	120	90	180	237.1	124.3	132.9	280	150	220	308.6	167.1	248.6	380	210	320	451.4	252.9	391.4
	5.6	160	120	240	197.1	94.3	87.3	240	120	160	268.6	137.1	188.6	340	180	260	411.4	222.9	331.4
GSA360	2.8	120	90	180															
	3.5	150	112.5	225	385.7	208.9	207.1	450	247.5	375									
	4.2	180	135	270	355.7	186.4	177.1	420	225	330	462.9	250.7	372.9	570	315	480	677.1	379.3	587.1
	5.6	240	180	360	295.7	141.4	117.1	360	180	240	402.9	205.7	282.9	510	270	390	617.1	334.3	497.1
GSA480	2.8	160	120	240															
	3.5	200	150	300	514.3	278.6	310.7	600	330	500									
	4.2	240	180	360	474.3	248.6	354.3	560	300	440	617.1	334.3	497.1	760	420	640	902.9	505.7	782.9
	5.6	320	240	480	394.3	188.6	234.3	480	240	320	537.1	274.3	377.1	680	360	520	822.9	445.7	662.9
GSA720	2.8	240	180	360															
	3.5	300	228	450	771.4	417.9	621.4	900	495	750									
	4.2	360	270	540	711.4	372.9	531.4	840	450	660	925.7	501.4	745.7	1140	630	960	1354	758.6	1174
	5.6	480	360	720	591.4	282.9	351.4	720	360	480	805.7	411.4	565.7	1020	540	780	1234	668.6	994.3
GSA960	2.8	320	240	480															
	3.5	400	300	600	1029	557	829	1200	660	1000									
	4.2	480	360	720	949	497	709	1120	600	880	1234	669	994	1520	840	1280	1806	1011	1566
	5.6	640	480	960	789	377	469	960	480	640	1074	549	754	1360	720	1040	1646	891	1326
GSA1440	2.8	411	308	617															
	3.5	600	450	900	1543	836	1243	1800	990	1500									
	4.2	960	720	1440	1183	566	703	1440	720	960	1611	823	1131	2040	1080	1560	2469	1337	1989
GSA1920	2.8	640	480	960															
	3.5	800	600	1200	2057	1114	1657	2400	1320	2000									
	4.2	690	720	1440	1897	994	1471	2240	1200	1760	2469	1337	1989	3040	1680	2560	3611	2023	3131
	5.6	1280	960	1920	1577	854	937	1920	960	1280	2149	1097	1509	2720	1440	2080	3291	1783	2651
GSA2880	2.8	960	720	1440															
	3.5	1200	900	1800	3086	1671	2486	3600	1980	3000									
	4.2	1440	1080	2160	2846	1491	2126	3360	1800	2640	3703	2006	2983	4560	2520	3840	5417	3034	4697
	5.6	1920	1440	2880	2366	1131	1406	2880	1440	1920	3223	1646	2263	4080	2160	3120	4937	2674	3977
GSA4000	2.8	1333	1000	2000															
	3.5	1666	1250	2500	4285	2321	3451	5000	2750	4166									
	4.2	1999	1500	3000	3952	2071	2951	4666	2500	3665	5143	2786	4141	6333	3500	5332	7523	4214	6522
	5.6	2666	2000	4000	3286	1571	1952	4000	2000	2666	4476	2286	3142	5666	3000	4332	6857	3714	5523

*spring set 2.8 includes spring assembly

Actuators suitable for the Garlock valve

Nominal diameter / Type	4 bar operating pressure		6 bar operating pressure	
	Double action	Single action*	Double action	Single action*
50	GDA60	GSA90 (4.2)	GDA60	GSA90 (4.2)
65	GDA106	GSA90 (4.2)	GDA60	GSA90 (4.2)
80	GDA106	GS90 (4.2)	GDA60	GSA90 (4.2)
100	GDA106	GSA180 (4.2)	GDA106	GSA180 (4.2)
125	GDA180	GSA240 (4.2)	GDA106	GSA240 (4.2)
150	GDA240	GSA360 (4.2)	GDA180	GSA360 (4.2)
200	GDA360	GSA480 (4.2)	GDA240	GSA480 (4.2)
250	GDA720	GSA720 (4.2)	GDA360	GSA720 (4.2)
300	GDA720	GSA1440 (3.5)	GDA720	GSA960 (5.6)
350	GDA1440	GSA1920 (4.2)	GDA720	GSA1920 (4.2)
400	GDA1920	GSA2880 (4.2)	GDA1440	GSA2880 (4.2)
450	GDA2880	GSA4000 (4.2)	GDA1920	GSA4000 (4.2)
500	GDA2880	GSA4000 (4.2)	GDA1920	GSA4000 (4.2)
600	GDA5760	-	GDA3840	-

*Type (spring set)



Garlock
an EnPro Industries family of companies

The matching accessories

The standardized connections for control valves and limit switches allow all products to be mounted according to customer specifications.

The standard selection of Garlock products includes the following types:

Direct-mount limit switch box

(only for sizes GDA15 to GDA720 and GSA15 to GSA360)

- Stop position indicators in sturdy PA6 polyamide box with integrated open/closed display
- Protection class IP 67, according to DIN EN 60529
- Cable gland M20 x 1.5 black (for cables Ø 6-12 mm)
- EPDM and NBR seals, stainless steel screws 1.4301



The device may be equipped with mechanical limit switches and proximity switches manufactured by Cherry, IFM, Pepperl & Fuchs, and Turck if desired.

Limit switch box with stainless steel bridge

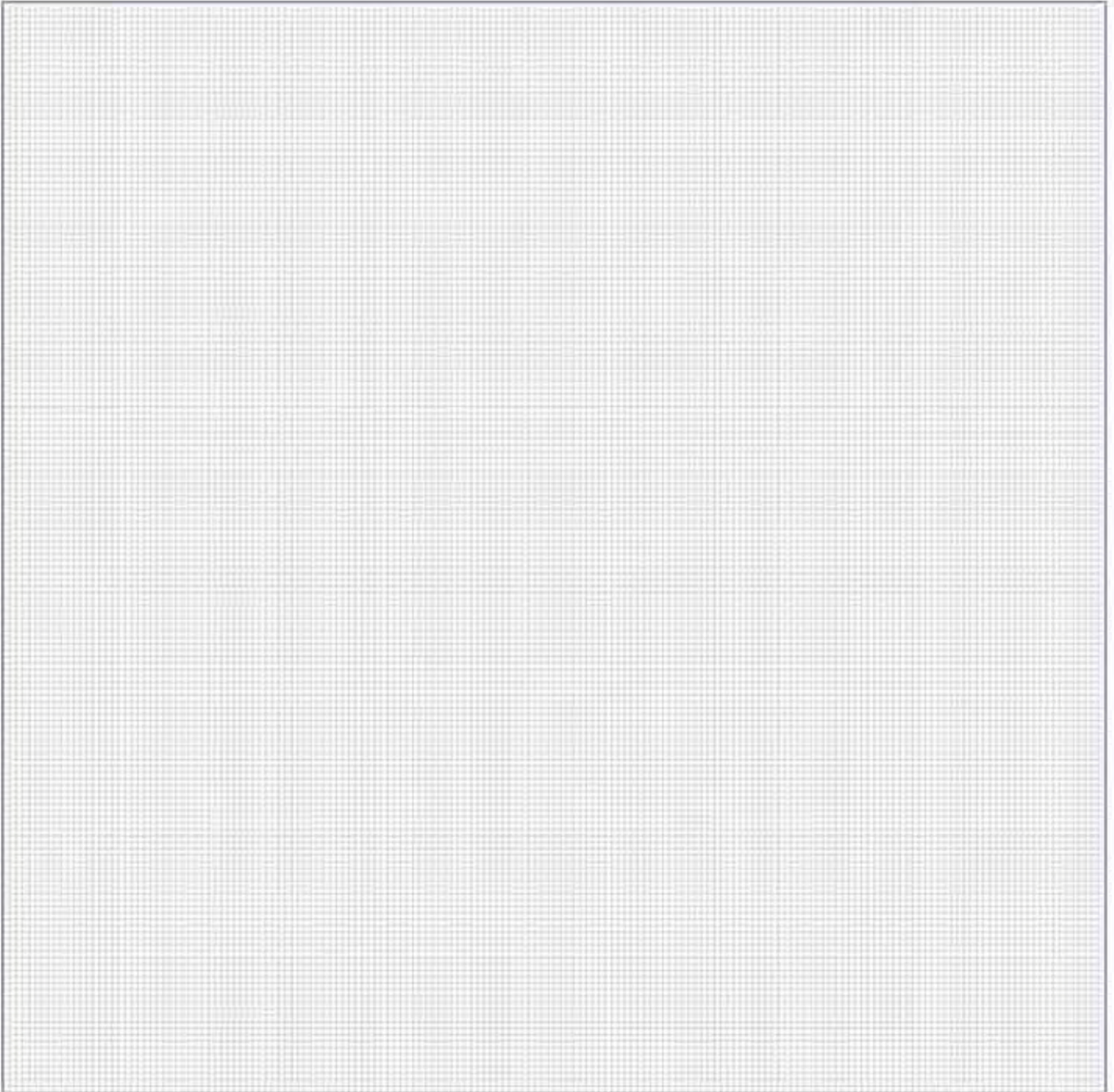
- Stop position indicators in sturdy PA6 polyamide box with transparent polycarbonate lid
- With integrated open/closed position display
- Protection class IP 67, according to DIN EN 60529
- Cable gland M20 x 1.5 black (for cables Ø 6-12 mm)
- Height adjustable mounting bracket made from stainless steel 1.4301
- EPDM and NBR seals, stainless steel screws 1.4301
- Stainless steel shaft made from 1.4301



The device may be equipped with mechanical limit switches and proximity switches manufactured by Cherry, IFM, Pepperl & Fuchs, Siemens, and Turck if desired.

As an alternative, limit switch boxes are also available with aluminum cases and in EEX design.

Ask your Garlock contact person about this matter.



Product Range



Hydraulic Components



Gasketing Products



Resilient Metal Seals



Compression Packings



Inflatable Seals



Valves



Oil Seals



Metallic Gasketing



Assemblies



Graphite Seals



Mechanical Seals



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