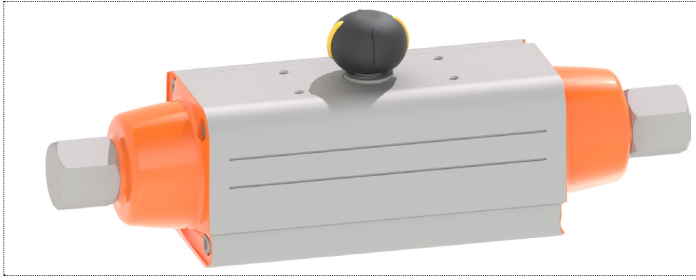
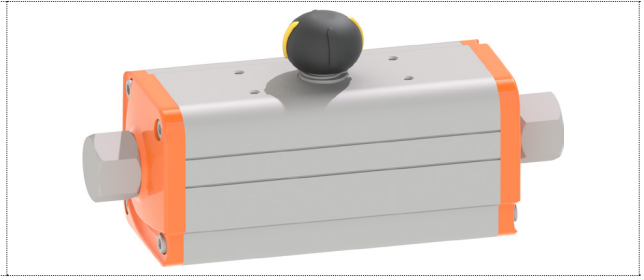
Pneumatic actuator type PA30 – PA90



PA30 – PA90 Single-acting (FC/FO)



PA30 – PA90 Double-acting (DA)

Product description

The pneumatic actuator series PA30 – PA90 serves to operate valves with a 90° positioning angle. GF actuators already comply with both the EN standards, as well as several ISO standards: actuator mounting flange according to ISO 5211; actuator square connection according to DIN 3337; connection for pilot valves, positioner and limit switch according to VDI/VDE 3845 (NAMUR); optical position indicator.

Function

All GF Piping Systems rotary actuators can be used as open/close or control actuators. The double-acting design means that the valve is opened or closed by the actuator applying compressed air. Depending on the requirement, the springs can open or close. The single-acting actuators only apply compressed air on one side, while adjustment on the other side is by spring force. This means that if there is air failure they return automatically to a safety position. Standard interfaces enable easy configuration of: pilot valve, limit switch and positioner.

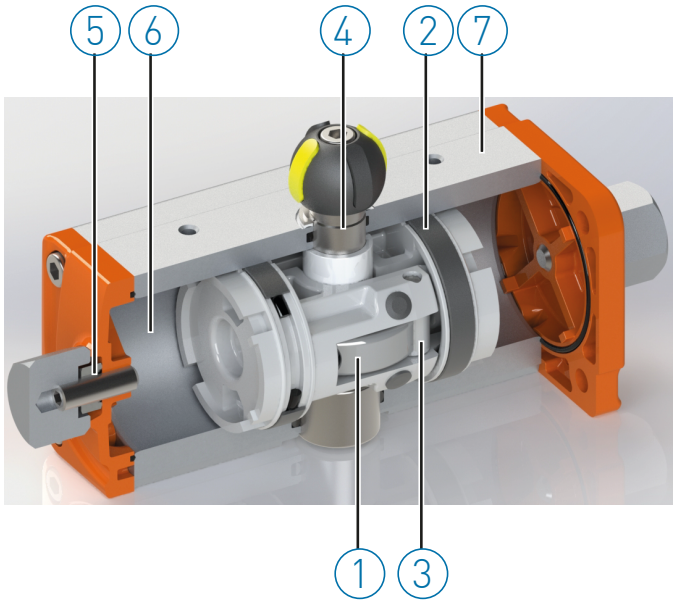
Applications

- Chemical process industry
- Water treatment
- Refrigeration

Benefits/features

- Integrated NAMUR interface for accessories and air connections
- Fast cycle times
- Improved stroke limiter
- Wide torque range, from 15 Nm up to 240 Nm
- Attractive price-performance ratio for all variants
- Construction of various limit switch versions without any problems
- Low installation height

Technical data



1 Lift design for high end torques
2 Seals ad piston guide rings
3 Automatic bolt lubrication
4 ISO/NAMUR connecting shaft of stainless steel
5 End position damping
6 The cylinder bore is lapped and hard anodized
7 Outer surface is hard anodized

Specification			
Combinations	Ball valve	Type 546 Pro	d63/DN50 – d110/DN100
	Butterfly valve	Type 567/578, type 038/039	d63/DN50 – d315/DN300
Rated torque Mdn.	15 – 240 Nm (11.1 – 177.1 lb. ft.)		
Peak torque	30 – 480 Nm (22.2 – 354.1 lb. ft.)		
Actuator connection	R⅛“ (PA30 - PA65); R¼ (PA70+)		
Cycle time	0.5 – 4 s		
Actuating angle	92° (-1°+91°)		
Mode of operation	Fail-safe to close (FC)		
	Fail-safe to open (FO)		
	Double-acting (DA)		
Ambient temperature	-20 – +80 °C		
Control medium	Neutral, non-aggressive gases		
	Preferably slightly oily compressed air		
Permissible humidity	0 – 95 %		
Position indicator	Optically integrated		
Housing material	Aluminum, hard anodized		
Weight	1.95 kg – 22.7 kg		
Control pressures in bar		**Single-acting**	**Double-acting**
	Min.	2.8	2.5
	Max.	8.4	8.4

Options

Pneumatic ball valves

The pneumatic actuated ball valves DN65-DN100 are a combination of the ball valve type 546 Pro, and the pneumatic actuator PA35-PA45.

Ball valve type	Dimensions	Function	Actuator, pneumatic
Type 546 Pro	DN65	FC/FO	PA35
Type 546 Pro	DN65	DA	PA35
Type 546 Pro	DN80	FC/FO	PA40
Type 546 Pro	DN80	DA	PA40
Type 546 Pro	DN100	FC/FO	PA40
Type 546 Pro	DN100	DA	PA45

Butterfly valve, pneumatically operated

The pneumatically actuated butterfly valve type 240 is designed for wafer style installation. The pneumatically actuated butterfly valve types 243/244 are designed for lug style or wafer style installation.

The electro-pneumatic positioner, stroke limiter, and feedback switches give flexibility for integration into a wide variety of applications.

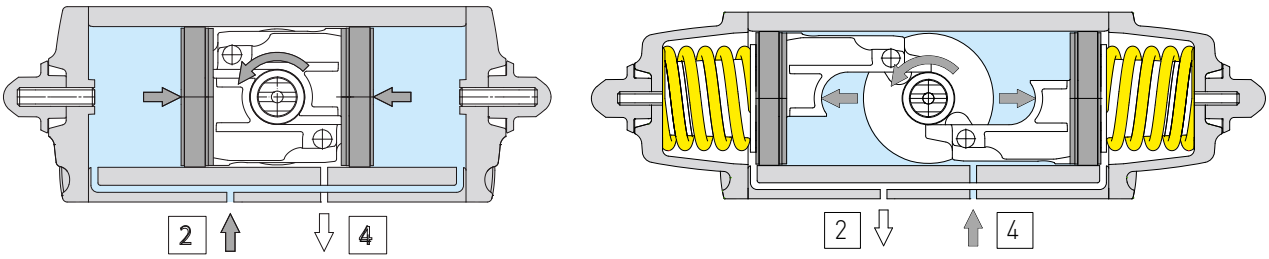
Butterfly valve, pneumatic	Actuator, pneumatic	Butterfly valve, manually operated	Dimensions	Materials	Standards
Type 240	PA30 – P90	Type 567	DN50 – DN300	All	All standards
Type 243	PA30 – P90	Type 578	DN50 – DN300	All	ISO/DIN
Type 244	PA30 – P90	Type 578	DN50 – DN300	All	ANSI

The metal butterfly valves type 038P/039P can be used universally as open/close or control valves. The easy installation of the valve between pipe flanges warrants reliable operation and sealing. The Rilsan-coated valve body and the ductile iron valve disc provide high resistance against corrosion. The butterfly valves are also available in a standard version with stainless steel valve disc.

Butterfly valve, pneumatic	Actuator, pneumatic	Butterfly valve, manually operated	Dimensions	Standards
Type 038P	PA30 – P70	Type 038 lug style	DN50 – DN300	ISO/DIN, ASTM
Type 039P	PA30 – P70	Type 039 wafer style	DN50 – DN300	All standards

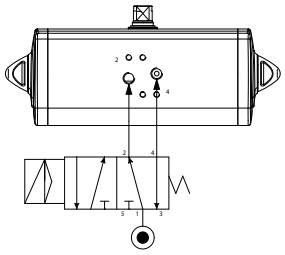
Technical basics

Functional prinziple DA/FC/FO

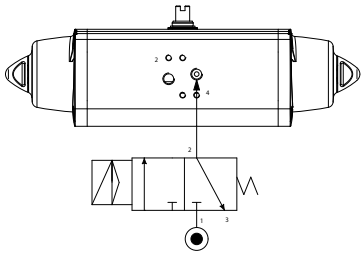


DA Double-acting	FC/FO Single-acting
The port 2 is in connection with the cylinder side chambers. Supplying pressurised air in port 2, the actuator drive shaft rotates counter clockwise to open. While the port 4 is in connection with the pressurised intermediate chamber, the drive shaft rotates clockwise to close.	FC: The compressed air supply causes the cylinders to move outwards against the spring tension, until they reach their end position. Without compressed air, the drive is automatically closed by the spring force. FO: The compressed air supply causes the cylinders to move inwards against the spring tension, until they reach the end position. Without compressed air, the actuator is automatically opened by the spring force.

Operating diagram FC, FO, DA



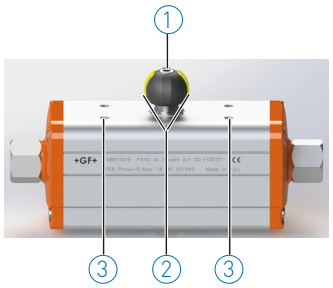
DA Double-acting
with NAMUR 5/2-way valve



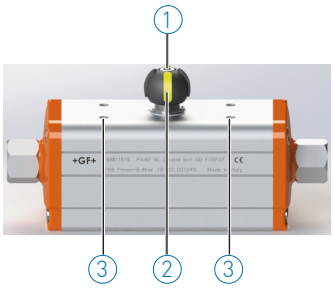
FC/FO Single-acting
with NAMUR 5/2-way valve

Position indicator

The position indicator displays the valve position. The valve positions can be read on the fitted cover.



Position CLOSED



Position OPEN

The valve positions can be read on the position indicator marking. The NAMUR accessory interface serves to connect accessories, such as position feedback or positioner.

Control air

Venting opening

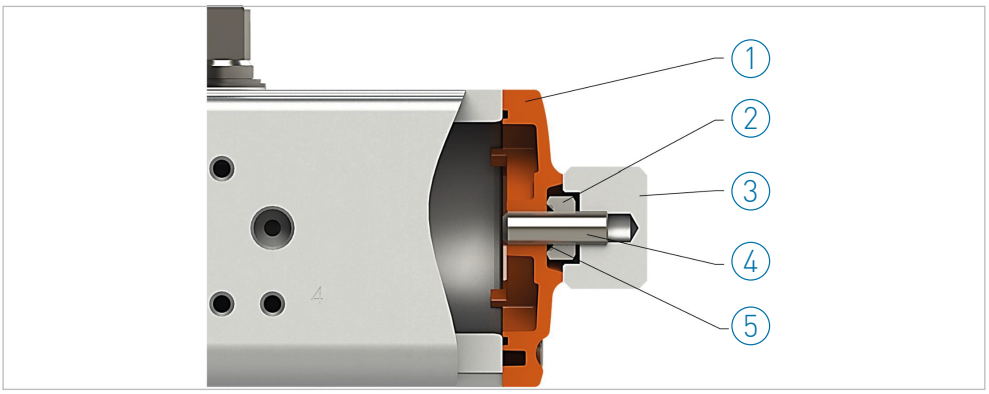
In designs with the FC/FO functions, the bleed hole protected by a green reducing plug may not become damaged or plugged, since the movement of the actuator will otherwise be restricted.

The control air connections are marked with stickers that describe the function of the control air at the respective connection. In the above example, the control air connection A is opening. This is subsequently a pneumatic actuator for the function FC (fail-safe to close).

Control air is introduced via the open control connection A (function FC and FO) or via the two control connections A and B (function DA).

Stroke limiter

In designs with a stroke limiter, the stroke limiter is set at the factory to 90°. This setting can be changed as needed. Limiting the turning movement in the direction of the working position to less than 90°, for example to 45°, is possible in this way.



1 Cap
2 Nut
3 Protection nut
4 Screw
5 O-Ring

Handling

Installation notes

If the control air connections used are too long, the control air openings of the product may become plugged.

- During installation, ensure that the control air connections do not protrude further into the housing than the existing threaded hole.

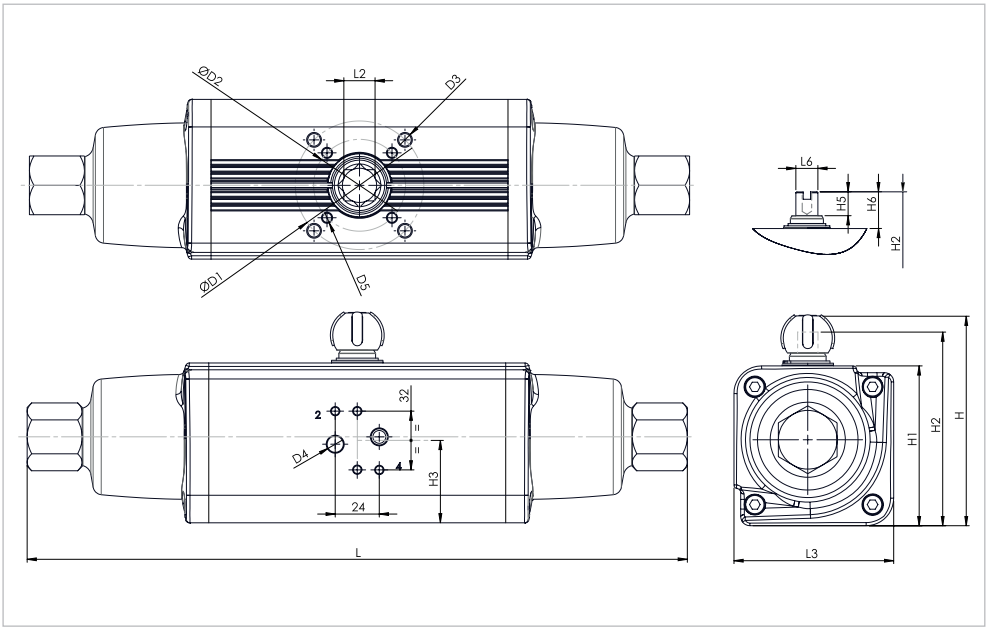
Maintenance notes

Regularly check whether the actuator opens and closes correctly.

! Installation and maintenance must be performed according to the corresponding installation instructions. The installation manual is included with the product, see also the online product catalog at www.gfps.com

Dimensions

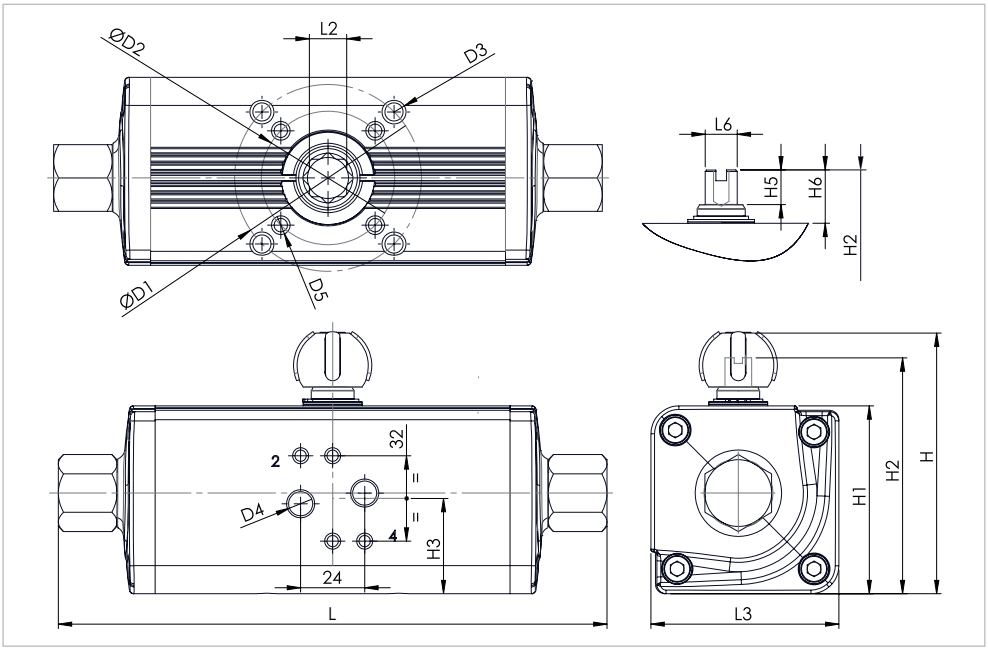
Single-acting (FC/FO)



Type		ØD1 (mm)	ØD2 (mm)	D3 (mm)	D4 (mm)	D5 (mm)	L (mm)	L2 (mm)	L3 (mm)	L6 (mm)
PA30	F05/07	70	50	M8x12	⅛"	M6x9	274.4	14	70.4	10
PA35	F05/07	70	50	M8x12	⅛"	M6x9	325.2	17	83.3	12
PA40	F05/07	70	50	M8x12	⅛"	M6x9	359.5	17	87	12
PA45	F07/10	102	70	M10x15	⅛"	M8x12	418	22	107.5	15
PA50	F07/10	102	70	M10x15	⅛"	M8x12	433.9	22	111.1	15
PA55	F07/10	102	70	M10x15	⅛"	M8x12	498.3	22	118	19
PA60	F10/12	125	102	M12x18	¼"	M10x15	547.3	27	134.9	19
PA65	F10/12	125	102	M12x18	¼"	M10x15	646	27	148	22
PA70	F10/12	125	102	M12x18	¼"	M10x15	681	36	168	24

Type		H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H5 (mm)	H6 (mm)
PA30	F05/07	98.2	70.4	90.4	35.7	13	20
PA35	F05/07	111.1	83.3	103.3	42.8	13	20
PA40	F05/07	114.8	87	107	44.8	13	20
PA45	F07/10	149.5	107.5	137.5	54.5	16	30
PA50	F07/10	153.1	111.1	141.1	58.1	17	30
PA55	F07/10	160	118	148	60	19	30
PA60	F10/12	176.9	134.9	164.9	57.4	19	30
PA65	F10/12	190	148	178	61.5	19.5	30
PA70	F10/12	210.1	168	198	78	19.5	30

Double acting (DA)



Type		ØD1 (mm)	ØD2 (mm)	D3 (mm)	D4 (mm)	D5 (mm)	L (mm)	L2 (mm)	L3 (mm)	L6 (mm)
PA30	F03/05	50	36	M6x9	⅛"	M5x8	181.1	11	59.2	9
PA35	F03/05	50	36	M6x9	⅛"	M5x8	196.1	11	64.5	10
PA40	F05/07	70	50	M8x12	⅛"	M6x9	205.6	14	70.4	10
PA45	F05/07	70	50	M8x12	⅛"	M6x9	242	17	83.3	12
PA50	F05/07	70	50	M8x12	⅛"	M6x9	249.1	17	87	12
PA55	F07/10	102	70	M10x15	⅛"	M8x12	290.2	22	107.5	15
PA60	F07/10	102	70	M10x15	⅛"	M8x12	313.9	22	111.1	15
PA65	F07/10	102	70	M10x15	⅛"	M8x12	339.6	22	118	19
PA70	F10/12	125	102	M12x18	¼"	M10x15	382.5	27	134.9	19

Type		H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H5 (mm)	H6 (mm)
PA30	F03/05	87	59.2	79.2	30.3	10	20
PA35	F03/05	92.3	64.5	84.5	32.5	13	20
PA40	F05/07	98.2	70.4	90.4	35.7	13	20
PA45	F05/07	111.1	83.3	103.3	42.8	13	20
PA50	F05/07	114.8	87	107	44.8	13	20
PA55	F07/10	149.5	107.5	137.5	54.5	16	30
PA60	F07/10	153.1	111.1	141.1	58.1	17	30
PA65	F07/10	160	118	148	60	19	30
PA70	F10/12	176.9	134.9	164.9	57.4	19	30

Torque depends on control pressure

Torque (Nm)		Single acting					
Type		2.8 bar		4.2 bar		5.6 bar*	
		air	Spring	air	Spring	air	Spring
PA30 FC/FO	0 °	15.0/14.6	10.0/11.2	22.5/21.9	15.0/16.7	30.0/29.2	20.0/22.3
	45 °	7.5/7.8	7.5/7.8	11.3/11.6	11.3/11.6	15.0/15.5	15.0/15.5
	90 °	10.0/11.2	15.0/14.6	15.0/16.7	22.5/21.9	20.0/22.3	30.0/29.2
PA35 FC/FO	0 °	26.5/26.0	17.5/18.5	40.0/39.0	26.0/27.8	53.0/52.0	35.0/37.0
	45 °	13.0/13.0	13.0/13.0	19.5/19.5	19.5/19.5	26.0/26.0	26.0/26.0
	90 °	17.5/18.5	26.5/26.0	26.0/27.8	40.0/39.0	35.0/37.0	53.0/52.0
PA40 FC/FO	0 °	30.0/28.3	20.0/23.3	45.0/42.4	30.0/34.9	60.0/56.5	40.0/46.5
	45 °	15.0/15.6	15.0/15.6	22.5/23.3	22.5/23.3	30.0/31.1	30.0/31.1
	90 °	20.0/23.3	30.0/28.3	30.0/34.9	45.0/42.4	40.0/46.5	60.0/56.5
PA45 FC/FO	0 °	45.0/41.8	30.0/32.5	67.5/62.7	45.0/48.7	90.0/83.6	60.0/64.9
	45 °	22.5/22.3	22.5/22.3	33.9/33.4	33.9/33.4	45.0/44.5	45.0/44.5
	90 °	30.0/32.5	45.0/41.8	45.0/48.7	67.5/62.7	60.0/64.9	90.0/83.6
PA50 FC/FO	0 °	60.0/56.5	40.0/45.8	90.0/84.7	60.0/68.7	120.0/112.9	80.0/91.6
	45 °	30.0/30.5	30.0/30.5	45.0/45.8	45.0/45.8	60.0/61.0	60.0/61.0
	90 °	40.0/45.8	60.0/56.5	60.0/68.7	90.0/84.7	80.0/91.6	120.0/112.9
PA 55 FC/FO	0 °	90.0/84.8	60.0/66.7	135.0/127.2	90.0/100.1	180.0/169.6	120.0/133.4
	45 °	45.0/45.3	45.0/45.3	67.5/68.0	67.5/68.0	90.0/90.6	90.0/90.6
	90 °	60.0/66.7	90.0/84.8	90.0/100.1	135.0/127.2	120.0/133.4	180.0/169.6
PA60 FC/FO	0 °	120.0/114.5	80.0/91.5	180.0/171.8	120.0/137.2	240.0/229.0	160.0/182.9
	45 °	60.0/61.5	60.0/61.5	90.0/92.3	90.0/92.3	120.0/123.0	120.0/123.0
	90 °	80.0/91.5	120.0/114.5	120.0/137.2	180.0/171.8	160.0/182.9	240.0/229.0
PA65 FC/FO	0 °	180.0/172.0	120.0/137.2	270.0/258.0	180.0/205.7	360.0/344.0	240.0/274.3
	45 °	90.0/92.3	90.0/92.3	135.0/138.4	135.0/138.4	180.0/184.5	180.0/184.5
	90 °	120.0/137.2	180.0/172.0	180.0/205.7	270.0/258.0	240.0/274.3	360.0/344.0
PA70 FC/FO	0 °	240.0/211.8	160.0/196.4	360.0/317.6	240.0/294.6	480.0/423.5	320.0/392.8
	45 °	120.0/120.4	120.0/120.4	180.0/180.5	180.0/180.5	240.0/240.7	240.0/240.7
	90 °	160.0/196.4	240.0/211.8	240.0/294.6	360.0/317.6	320.0/392.8	480.0/423.5

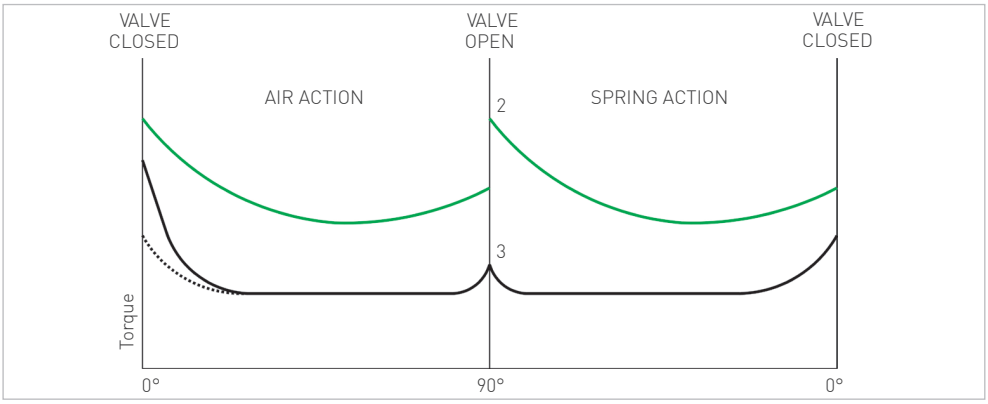
* Standard series; for lower control pressures, special springs are available

Torque (Nm)		Double acting					
Type		3 bar	4 bar	5 bar	5.6 bar*	6 bar	7 bar
PA30 DA	0 °	16.1	21.4	26.8	30.0	32.1	37.5
	45 °	8.0	10.7	13.4	15.0	16.1	18.8
	90 °	12.1	16.1	20.1	22.5	24.1	28.1
PA35 DA	0 °	24.1	32.1	40.2	45.0	48.2	56.3
	45 °	12.1	16.1	20.1	22.5	24.1	28.1
	90 °	18.1	24.1	30.3	33.8	36.2	42.2
PA40 DA	0 °	32.1	42.9	53.6	60.0	64.3	75.0
	45 °	16.1	21.4	26.8	30.0	32.1	37.5
	90 °	24.1	32.1	40.2	45.0	48.2	56.3
PA45 DA	0 °	56.8	75.7	94.6	106.0	113.6	132.5
	45 °	28.4	37.9	47.3	53.0	56.8	66.3
	90 °	42.9	57.1	71.4	80.0	85.7	100.0
PA50 DA	0 °	64.3	85.7	107.1	120.0	128.6	150.0
	45 °	32.1	42.9	53.6	60.0	64.3	75.0
	90 °	48.2	64.3	80.4	90.0	96.4	112.5
PA55 DA	0 °	96.4	128.6	160.7	180.0	192.9	225
	45 °	48.2	64.3	80.4	90.0	96.4	112.5
	90 °	72.3	96.4	120.5	135.0	144.6	168.8
PA60 DA	0 °	128.6	171.4	214.3	240.0	257.1	300.0
	45 °	64.3	85.7	107.1	120.0	128.6	150.0
	90 °	96.4	128.6	160.7	180.0	192.9	225.0
PA65 DA	0 °	192.9	257.1	321.4	360.0	385.7	450.0
	45 °	96.4	128.6	160.7	180.0	192.9	225.0
	90 °	144.6	192.9	241.1	270.0	289.3	337.5
PA70 DA	0 °	257.1	342.9	428.6	480.0	514.3	600.0
	45 °	128.6	171.4	214.3	240.0	257.1	300.0
	90 °	192.9	257.1	321.4	360.0	385.7	450.0

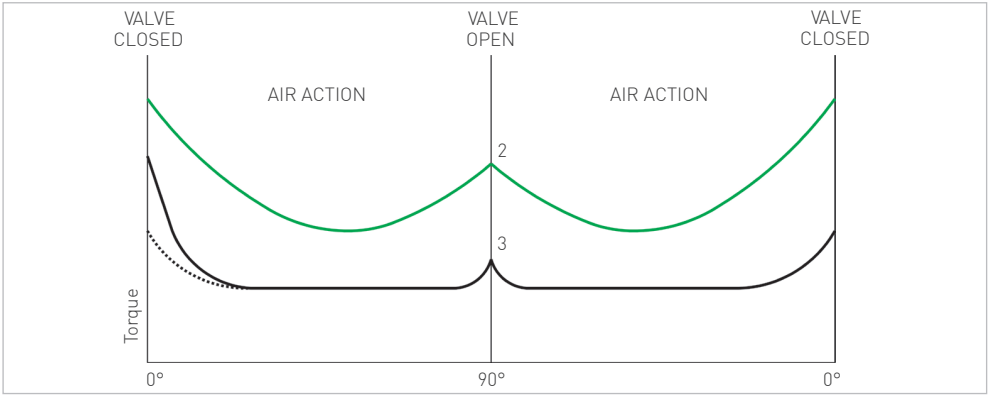
* Standard series; for lower control pressures, special springs are available

Torque characteristics

FC/FO Single-acting



DA Double acting



Accessories

- 3/2-way pilot valve PV94/95
- 3/2 – 5/2-way pilot valve MNL532
- 4/2-way pilot valve 5470
- Pilot pilot valve type PV2000 (for valve clusters)
- Electropneumatic positioner type RPC
- Limit switch box for feedback
- AS interface
- Emergency manual override

For further information on accessories, refer to the online product catalog at www.gfps.com

11/2023-A

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