

PG Series 180° Rotation Pneumatic Actuators

Chemline PG Series are half turn pneumatic actuators specially chosen for all sizes of 3-way ball valves. These actuators are epoxy and Rilsan coated for high corrosion resistance. All offer long cycling life.

Normal working temperatures are -32°C to 90°C. They may be actuated with air, water, natural gas or non-aggressive fluids up to 120 psi pressure.

PG Series is one in a range of actuators specially selected for ball and butterfly valves. Hardware kits are available for mounting of actuators in the field. Chemline also offers complete actuated valves, fully assembled and bench tested.

Low Cost

Corrosion Resistant

Long Cycling Life

Features

Long Cycling Life

- Rated for 1 million cycles
- Self-lubricating Rilsan coating on inner contact surfaces for better wear than epoxy coating or anodizing
- Self-lubricating O-Rings
- Double O-Ring Shaft Seals
- Minimal backlash with no play in parts
- Massive tooth engagement between racks and pinion

Corrosion Resistant*

- Silicone-free aluminum alloy body and end caps
- 4-Step pre-treatment process
- Cataphoresis layer for extra protection, smoother surface
- Low friction coefficient Rilsan coating inside and out for very smooth and durable finish as well as outstanding chemical and abrasion resistance

Application Diversity

- Normal working temperatures are -32°C to 90°C
- Can be actuated with air, water, natural gas or non-aggressive fluids up to 120 psi pressure

Standard ISO and NAMUR Dimensions

- Permits easy mounting of control accessories to actuator and of actuator to valve
- Standardized mounting kits/brackets are readily available

Compact, Simple Design

- Double piston, double rack and pinion design supplies constant torque output
- Balanced Internal Forces
- High torque-to-weight ratio
- All porting is integral



Epoxy and Rilsan Coated Aluminum

SERIES: PGSR – Spring Return
PGDA – Double Acting

CONTROL PRESSURE: 40 to 120 psi

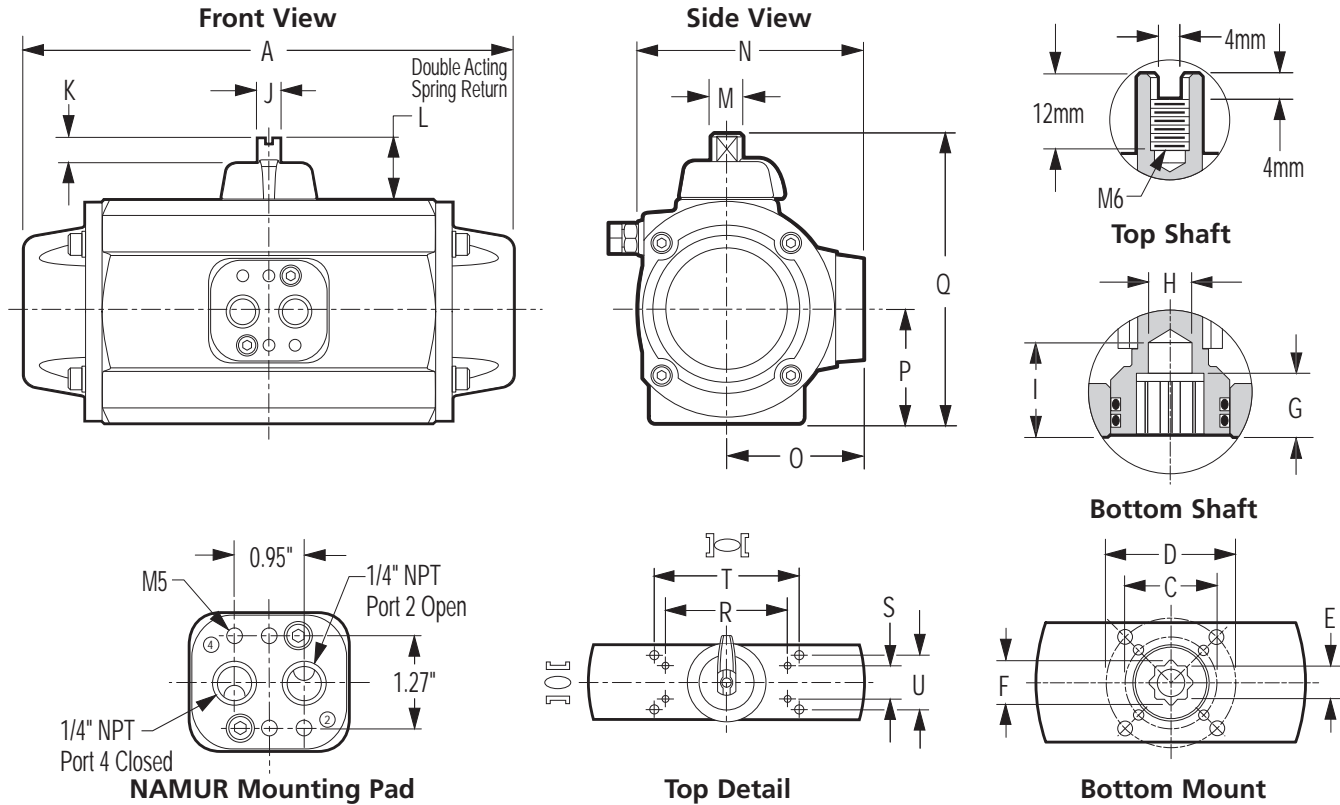
OUTPUT TORQUES:
Up to 1,200 in.-lb. Spring Return
and 2,800 in.-lb. Double Acting



PG Series on Type 21
True Union Ball Valve

* See page 4 for details of coating process and specifications.

PG Series Pneumatic Actuators



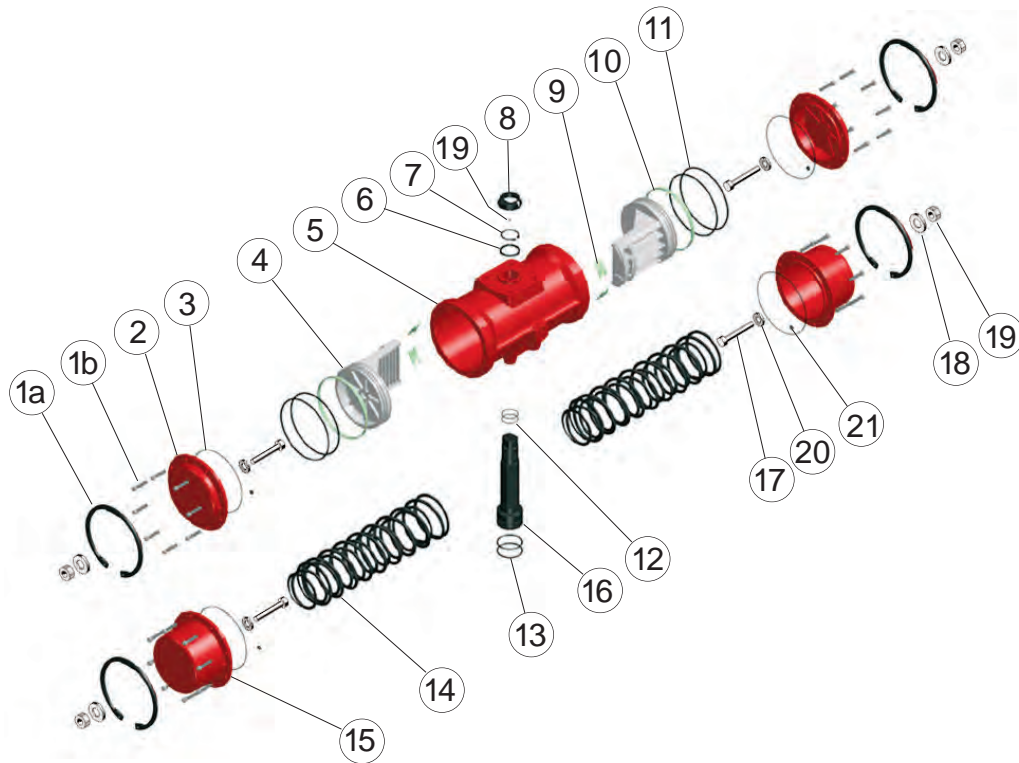
DIMENSIONS INCHES

Size	Item No. DA SR		A SR	B DA	Bottom Mount Detail						Bottom Shaft Detail				
					C			D			E	F	G	H	I
					Dia.	Thread	Depth	Dia.	Thread	Depth					
10	PGDA10	PGSR10	11.89	9.76	1.97 (F05)	M6	0.67	2.76 (F07)	M8	0.79	0.67	0.91	0.59	0.59	1.18
20	PGDA20	PGSR20	14.72	11.65	1.97 (F05)	M6	0.71	2.76 (F07)	M8	0.91	0.87	1.14	0.75	0.87	1.26
30	PGDA30	PGSR30	23.58	18.46	2.76 (F07)	M8	0.91	4.02 (F10)	M10	1.06	1.18	1.57	1.18	1.18	1.65

DIMENSIONS INCHES

Size	Item No. DA SR		Top Shaft Detail				N	O	P	Q	R	S	T	U
			J	K	L	M								
10	PGDA10	PGSR10	0.39	0.43	1.18 (ISO-2)	0.54	4.02	2.17	1.99	5.00	3.15	1.18	3.78	1.61
20	PGDA20	PGSR20	0.63	0.43	1.18 (ISO-2)	0.86	5.00	2.64	2.80	6.34	3.15	1.18	3.78	1.61
30	PGDA30	PGSR30	0.63	0.43	1.18 (ISO-2)	0.86	6.97	3.70	3.78	8.31	3.15	1.18	3.78	1.61

PG Series Pneumatic Actuators



PARTS

▲ Recommended Spare Parts

No.	Part	Size	Pcs.	Materials
1a▲	Snap Ring	10 & 20	2	Steel coated with cataphoresis
1b▲	Allen Screw	30	12	304 SS
2	Double Acting Cap	10 & 20	2	Aluminum Alloy coated with Polyamide
		30	2	Aluminum Alloy coated with cataphoresis and Polyamide
3▲	Cap O-Ring	10 to 30	2	Nitrile Buna-N
4	Piston	10 & 20	2	Zinc coated steel
		30	2	Aluminum Alloy
5	Cylinder	10 to 30	1	Aluminum Alloy coated with cataphoresis and Polyamide
6	Washer	10 to 30	1	Polyamide 6
7	Spring Clip	10 to 30	1	Steel coated with Nickel-PTFE
8	Position Indicator	10 to 30	1	Polyamide
9	Piston Guide	10 & 20	2	Nylon
		30	4	PTFE-Bronze
10	Guide Ring	10 & 20	2	Polyacetal
		30	2	PTFE-Bronze

PARTS

▲ Recommended Spare Parts

No.	Part	Size	Pcs.	Materials
11▲	Piston O-Ring	10 & 20	2	Nitrile Buna-N
		30	4	Nitrile Buna-N
12▲	Upper Shaft O-Ring	10 to 30	2	Nitrile Buna-N
13▲	Lower Shaft O-Ring	10 to 30	2	Nitrile Buna-N
14	Springs Set	10 to 30	1	DIN-17223-C coated with cataphoresis
15	Spring Return Cap	10 & 20	2	Aluminum Alloy coated with Polyamide
		30	2	Aluminum Alloy coated with cataphoresis and Polyamide
16	Shaft	10 & 20	1	303 SS
		30	1	Steel coated with cataphoresis
17	Regulable End Stop	10 to 30	1	304 SS
18	Water Washer	10 to 30	2	Nylon
19	Nut	10 to 30	2	304 SS
20	Reinforcement	20 & 30	2	303 SS
21	Water Tightness Plane Gasket	30	2	Nitrile Buna-N

PG Series Pneumatic Actuators



TORQUE – DOUBLE ACTING INCH POUNDS

Model No.	Supply Pressure (psi)					Model No.	Supply Pressure (psi)				
	40	60	80	100	120		40	60	80	100	120
PGDA10	148	234	321	408	495	PGDA30	898	1,380	1,866	2,348	2,834
PGDA20	332	521	711	901	1,091						

TORQUE – SPRING RETURN INCH POUNDS

Model No.	Number of Springs	Spring		Supply Pressure (psi)									
				40		60		80		100		120	
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
PGSR10	1	93	65	83	55	170	142	257	229	344	315	-	-
	2	139	98	-	-	136	96	223	182	310	269	397	356
	3	200	142	-	-	93	34	180	121	267	208	353	295
	4 ¹	231	160	-	-	-	-	161	91	248	177	335	264
PGSR20	1	198	119	213	134	403	324	592	513	782	703	-	-
	2	316	185	147	15	337	205	526	394	716	584	906	774
	3	435	264	-	-	231	60	430	259	629	458	828	657
	4 ¹	488	303	-	-	219	34	408	224	598	413	787	602
PGSR30	1	409	239	659	488	1,143	972	1,627	1,456	2,111	1,940	-	-
	2	647	409	489	250	972	734	1,456	1,217	1,940	1,701	2,423	2,185
	3	886	613	284	11	768	496	1,252	980	1,737	1,464	2,221	1,948
	4 ¹	1,193	784	-	-	597	188	1,081	672	1,566	1,157	2,050	1,641

¹Standard Spring set.

WEIGHTS, AIR CONSUMPTIONS AND CYCLE TIMES

Size	Item No.	Weight Lbs.	Double Acting				Spring Return					
			Air Consumption (li) ²		Cycle Time (Sec.)		Item No.	Weight Lbs.	Air Consumption (Standard litres) ²	Cycle Time (Sec.)		
			Open Port 2	Close Port 4	Open Port 2	Close Port 4				Open Port 2	Close Port 4	
10	PGDA10	8.58	0.35	0.45	0.25	0.25	PGSR10	9.90	0.35	0.30	0.30	
20	PGDA20	10.78	0.80	1.05	0.40	0.40	PGSR20	14.85	0.80	0.50	0.50	
30	PGDA30	21.23	2.10	1.90	0.60	0.60	PGSR30	36.19	2.10	1.20	1.20	

²1 Liter = 61.02 cubic inches

PROPERTIES OF THE COATING PROCESS

The aluminium actuator bodies and end caps undergo a 4-step pre-treatment, painting by cationic electro deposition (cataphoresis) and the final step is the application of a 10 micron thick coat of Rilsan polyamide 11. This provides outstanding corrosion resistance to effluents, sea water, sea mist, hydrocarbons, solvents and a large number of chemicals. It has excellent mechanical and physical properties, exceptionally smooth finish, extremely low friction coefficient which ensure a longer cycling life than competitors' products.

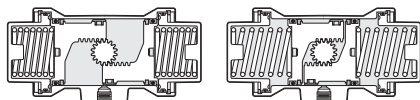
Pressure to **Port B** moves pistons outward, compressing springs (on spring return models only) and turning output shaft 180° counter-clockwise, as viewed from top of actuator.

OTHER ACTUATOR TYPES

- Aluminum Actuators
- Plastic Actuators
- Stainless Steel Actuators
- High-Temperature Actuators

OPERATION

Pressure to **Port A** moves pistons inward, turning output shaft 180° clockwise, as viewed from top of actuator.



P Series Accessories



For P Series Actuators

Accessories are supplied mounted to actuators and bench tested, or separately.

SOLENOID VALVES

Pilot solenoid valves control air supply air in and out of pneumatic actuators to open and close the valve and are electrically actuated. They are usually but not always mounted directly to the actuator. V Series Solenoid Valves are CSA/UL approved and designed for multi-million cycle life. These mount flush to P Series or any other NAMUR compliant pneumatic actuator. They are robust, reliable and corrosion resistant, offering high air flows and fast response. The same valve functions as both 5/2 way (for double acting actuators) and 3/2 way (for spring return actuators). Simply flip over the base plate which changes porting configurations. A screw type manual override is standard. Construction is glass reinforced polyamide body, nitrile seals, nickel plated ports and screws, and epoxy encapsulated coil. The electrical connection is a 3-pin DIN plug with 1/2" NPT for conduit connection. Grommet (cable gripper) and LED grommet (glows to indicate power) version plugs are also available. Versions are available in different voltages, also in intrinsically safe and explosion proof designs.



Solenoid Valves

LIMIT SWITCHES

Limit switches are for On and/or Off valve position feedback. YT Series Limit Switch Boxes are CSA/UL approved 2-position units which are easily mounted to P Series or any other NAMUR compliant rotary actuator. They are compact and robust, featuring quick-setting switch cams, high visibility position indicator beacon and a quick-access cover. Dual 1/2" NPT conduit entries and an 8-position terminal strip allow for wiring of a solenoid valve through the box. The standard model has an epoxy coated aluminum housing and single-pole double-throw switches rated for multi million cycles. An intrinsically safe version is available with inductive proximity switches. Also available are hazardous area enclosures. Another series is available with various BUS modules.



Limit Switches

DECLUTCHABLE GEAR OVERRIDE

The MO Series Manual Declutchable Gear Override allows manual valve/actuator operation of actuated valves in case supply pressure fails. The unit is mounted between the actuator and the valve mounting bracket. For normal powered operation the worm gear is disengaged by moving the lever bar upwards. Construction is epoxy coated cast iron housing with aluminum or welded steel hand wheel. These rugged units are suitable for indoor and outdoor use. The self-locking worm gear design offers safe and easy operation, positive manual positioning and long life.



Declutchable Gear Override

POSITIONERS

Valve positioners control actuator-valve position, responding to a signal from a process controller, usually electronic (most often 4–20mA) or sometimes pneumatic (3–15 psi). YT Series positioners are easy to mount directly to P Series actuators and other NAMUR compliant rotary actuators. They have epoxy coated aluminum enclosures and are also available in 316 stainless steel. All available models are attractively priced:

- **YT1200R 3–15 psi Pneumatic** – a conventional all-mechanical positioner
- **YT1300R 4–20 mA Electro-Pneumatic** – an electronic positioner designed for vibration resistance, better control and easy calibration
- **YT2300 4–20 mA Smart** – a fully digital positioner with intelligent functions like auto calibration, PID control, also theoretical and user defined characterized output. Options include alarms (switch or relay output), 4–20 mA transmitter for position feedback and HART digital communication protocol.



Positioners

AIR FILTER/REGULATOR

A filter/regulator is required to protect pneumatic equipment with small orifices from clogging due to debris and to protect from corrosion or fouling due to excess oil or condensed water in the air supply. Chemline **includes an air filter/regulator with all positioners** mounted to actuators. Chemline recommends they **also be supplied with all pilot solenoid valves**. The F/R-A is a one-piece air filter/regulator and pressure gauge with a GRP plastic body, polycarbonate filter bowl and polyethylene filter element. The filter bowl has a manual drain valve.



Air Filter/Regulator