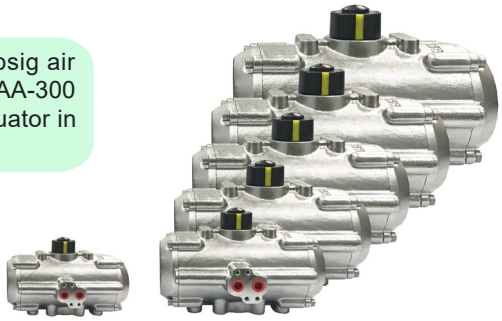
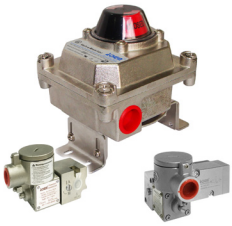
Design and Feature

Allied A Series rack and pinion actuators are stainless steel actuators suitable for use in corrosive environments. This Allied new design stainless steel actuator has been proved with long cycle life for the most demanding applications such as marine and offshore, chemical processing, pulp and paper, food and beverage, as well as petrochemical industries.

Total 10 different models cover wide range of output torques. At 80 psig air pressure, the output torque ranges is from 130 to 33,700 in-lbf. Model AA-300 is known as the largest such type of Rack & Pinion Stainless Steel Actuator in the market today.



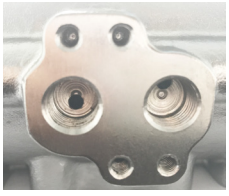


The body and end caps are investment casting stainless steel available either CF8 (SS304) or CF8M (SS316) as request.

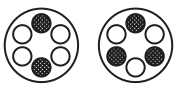
Optimized engineering, precision machining, perfection assembly and rigor tests and quality control system assure the actuator smooth operation and long cycle life.

Flexible adjustment in travel ends. The two independent external travel stop adjustment bolts allow +/- 5 degree adjustment at both 0 degree and 90 degree positions.

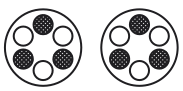
Fully conforms to latest ISO 5211 and NAMUR standards for easy mounting of quarter turn valves, limit switches, solenoid valves, and other accessories.



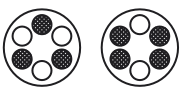
High performance pre-loaded spring cartridges allow for greater safety and longer spring life. Double acting can be easily changed to spring return, or vice versa by adding and removing the spring cartridges. Different torque requirements can also be easily achieved by changing the quantities of the springs.



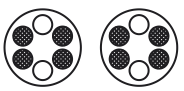
5 Springs



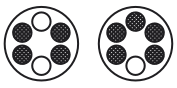
6 Springs



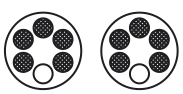
7 Springs



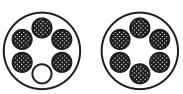
8 Springs



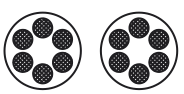
9 Springs



10 Springs



11 Springs

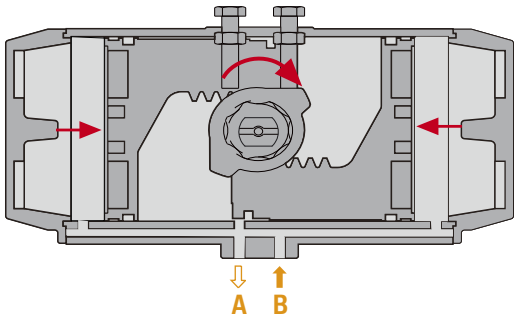


12 Springs

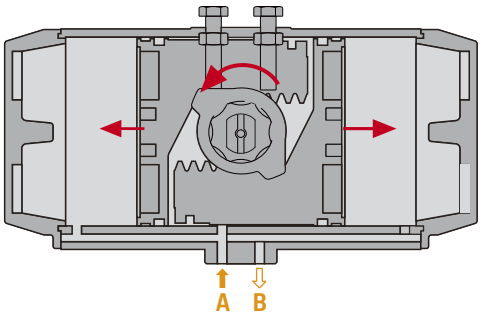
Even spring set is recommended for high cycle application.

Operating Principle

Double Acting (R-closed)

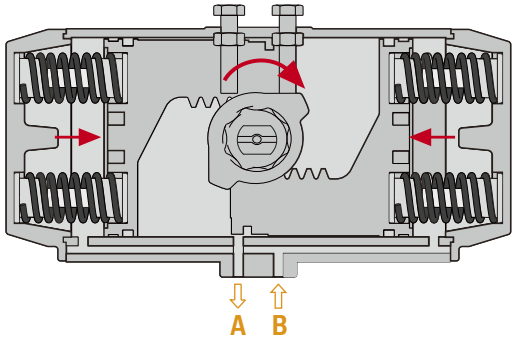


By supplying air to Port B, pressure is applied to the outside chamber and drives the dual pistons inward.
The action causes the pinion to turn clockwise while the air is being exhausted from Port A.

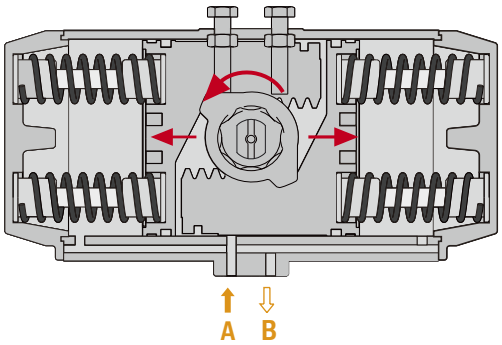


By supplying air to Port A, pressure is applied to the center chamber and forces the dual pistons outward.
Linear piston force is transferred via gear racks to the pinion gear, causing the pinion to turn counterclockwise while the air is being exhausted from Port B.

Spring Return (R-closed, fail closed)



Upon loss of air pressure, the stored energy in the compressed springs forces the pistons inwards producing rotary motion with exhaust air exiting at Port A. This "fail safe" position is held by spring force until air pressure reapplied to Port A.



By supplying air to Port A, pressure is applied to the center chamber, forcing the dual pistons outward, compressing the springs in the outside chambers to produce a counterclockwise rotation. Exhaust air exits at Port B.

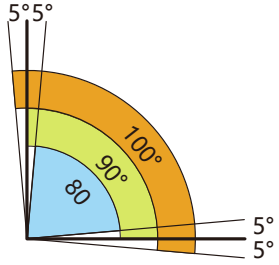
Ordering Guide

A — DA — 63 — 12

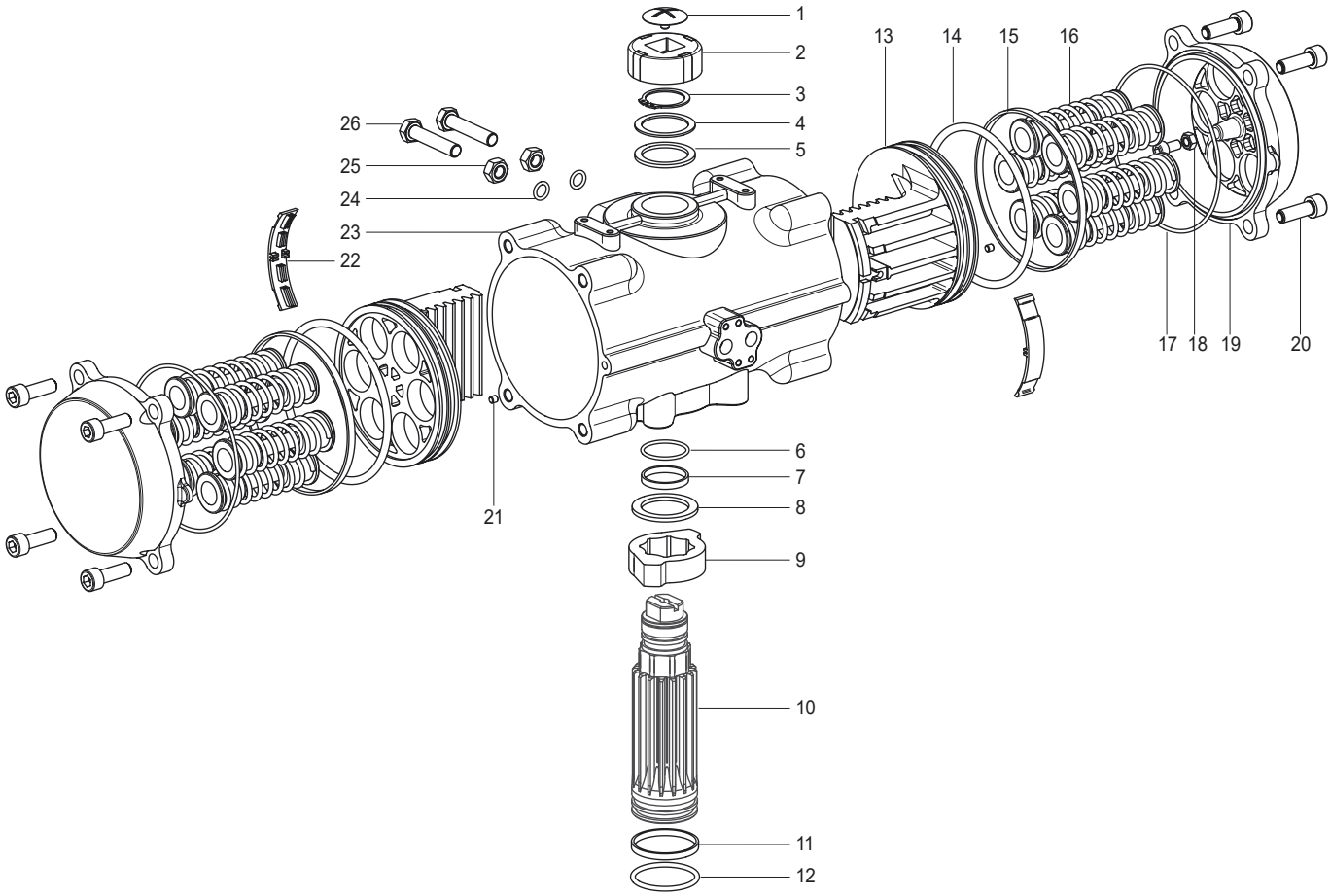
- **A** — Code of A stainless steel pneumatic actuator
- **DA** — Acting Type
  - DA - Double Acting
  - SR - Spring Return
- **63** — Size of the Actuator
  - 45
  - 52
  - 63
  - 75
  - 83
  - 92
  - 105
  - 125
  - 140
  - 160
  - 190
  - 210
  - 240
  - 270
  - 300
  - 400
- **12** — Spring Qty.
  - 4
  - 5
  - 6
  - 7
  - 8
  - 9
  - 10
  - 11
  - 12

Stroke Adjustment:

Stroke Adjustment: Pinion stops allow ±5° adjustment at 0° and 90°.



Materials of Construction



No.	Part	Qty.	Material
1	Indicator Screw	1	Plastic
2	Indicator	1	Plastic
3	Snap Ring	1	Stainless Steel
4	Washer	1	Stainless Steel
5	Outside Washer	1	Delrin
6	O-ring (Pinion Top)	1	NBR / L NBR / Viton
7	Bearing (Pinion Top)	1	Delrin
8	Inside Washer	1	Delrin
9	Cam	1	Stainless Steel (316 / 304 on requiring)
10	Pinion	1	Stainless Steel (316 / 304 on requiring)
11	Bearing (Pinion Bottom)	1	Delrin
12	O-ring (Pinion Bottom)	1	NBR / L NBR / Viton
13	Pistion	2	Stainless Steel (316 / 304 / Alu. on requiring)
14	O-ring (Piston)	2	NBR / L NBR / Viton

No.	Part	Qty.	Material
15	Bearing (Piston)	2	Delrin
16	Cartridge Spring	0-12	Spring Steel
	Spring Retainer (L & R)		Nylon 66
	Retainer Connector		Stainless Steel/ Brass
17	O-ring (End Cap)	2	NBR / L NBR / Viton
18	Stop Screw	2	Stainless Steel
19	End Cap	2	Stainless Steel (316 / 304 on requiring)
20	Screw (End Cap)	8	Stainless Steel
21	Plug	2	NBR / L NBR / Viton
22	Guide Piston	2	Nylon 66
23	Body	1	Stainless Steel (316 / 304 on requiring)
24	O-ring (Adjust Screw)	2	NBR / L NBR / Viton
25	Nut (Adjust Screw)	2	Stainless Steel
26	Adjust Screw	2	Stainless Steel