

Pneumatic Actuators

Apollo® Rack & Pinion

Designed and manufactured for the ultimate in durability and reliability, the new Apollo® Pneumatic Rack & Pinion Actuators provide outstanding service life.

Apollo Actuation's new Rack & Pinion actuator reintroduces the replaceable insert drive adapters in all but the largest models. Many units retain dual "F" series bolt patterns and this combination of features will facilitate direct mounting of several valve styles.



FEATURES

1. Cast Aluminum Body

Yellow Chromate Coated
Polyester Powder Coat Finish

2. Die Cast Aluminum End Caps

Yellow Chromate Coated
Polyester Powder Coat Finish

3. Die Cast Aluminum Pistons

Yellow Chromate Coated

4. Aluminum Alloy Pinion

7075-T6
Hard-coat Anodized Finish

5. Drive Inserts

Extruded Aluminum
Hard-coat Anodized Finish

6. Preloaded Concentric Springs

Deltatone® Coated

7. Piston Guides

Molybdenum Disulfide filled Polyamide

8. Bushings

Polyoxymethylene (POM)

9. O-Ring Seals

Standard Temp. (-4°F to 180°F): Buna-N
High Temp. (-4°F to 250°F): Fluorocarbon
Low Temp. (-40°F to 180°F): Silicone

10. Capscrews, Nuts & Other Hardware

304 Stainless Steel

BENEFITS

- ✓ Compact Rack & Pinion Design
- ✓ Quarter-Turn Operation
- ✓ Designed for use on a variety of Valve Types; Ball Valves, Butterfly Valves, Plug Valves
- ✓ Applicable to Damper and Door Openers
- ✓ Thirteen Distinct Sizes
- ✓ Both Single Stop and Double Stop Versions**
- ✓ Both Double-Acting and Spring-Return Units
- ✓ Double-Acting Torque Outputs from 119 in-lbs to 40273 in-lbs with an 80 psi Air Supply
- ✓ Removable/Replaceable Drive Inserts*



- ✓ Pre-loaded Spring Assemblies
- ✓ ISO 5211 Valve Mounting
- ✓ NAMUR (VDI/VDE) Accessory Mounts
- ✓ ATEC Classification II, 2 GD, Zones 1 or 2 (Gases) and 21 or 22 (Dust)
- ✓ Anti Blow-Out Pinion Design
- ✓ Maximum Pressure Rating: 116 psig (8 bar)
- ✓ Compatible Media: Clean, Dry Air, Filtered Non-corrosive Gas or Light Hydraulic Oil
- ✓ Pre-lubricated for the life of the Actuator
- ✓ Chromate Corrosion Protection on all Aluminum Components
- ✓ Each Unit is Serialized
- ✓ **5 Year Apollo Warranty**

Notes:

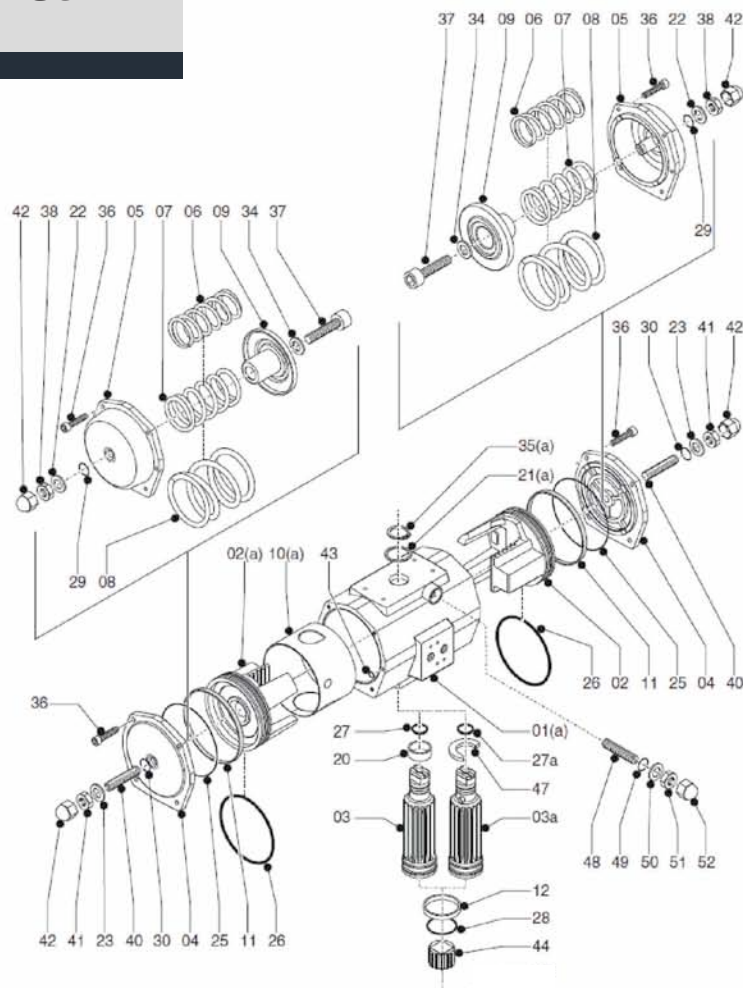
* A wide selection of standard inserts is available for Square, DIN and Double-D drives.

** Single Stop units are used where the open position of the valve requires precise adjustment. These are standard on all actuators with the exception of the two larger sizes where single stops are optional. Actuators with dual adjustable stops are also available for those applications on butterfly valves, for example, to allow precise adjustment of both the open and closed positions.

"Apollo" Valves

Actuators and Controls

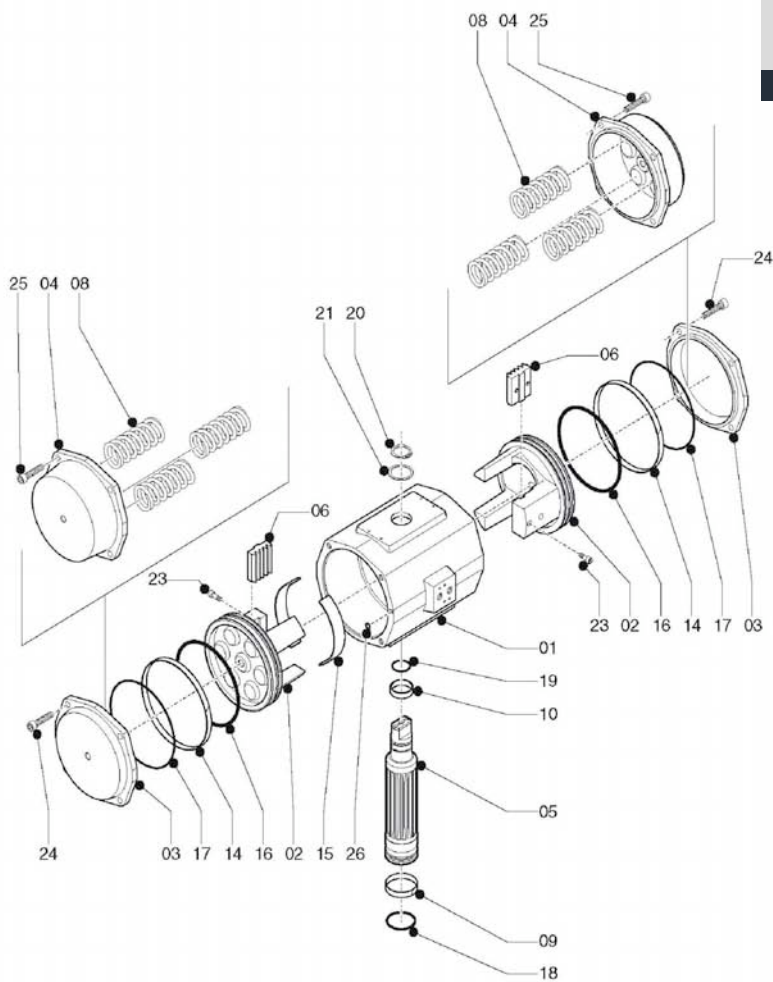
A0025 to A1600 Parts List



01 (1) Body	21* (1) Thrust Washer	38 (2) Stop Adjustment Nut
02 (2) Piston	22* (2) Stop Screw Washer	40 (2) Limit Stop Bolt
03 (1) Pinion	23* (2) Stop Screw Washer	41 (2) Stop Adjustment Nut
04 (2) D-A End Cap	25* (2) End Cap O-ring	42 (2) Nut Cover
05 (2) S-R End Cap	26* (2) Piston O-ring	43 (2) Port O-ring
06 (0 to 2) Inner Spring	27* (1) Upper Pinion O-ring	44 (1) Insert/Adapter
07 (0 to 2) Middle Spring	28* (1) Lower Pinion O-ring	47 (1) Stroke Cam
08 (0 to 2) Outer Spring	29* (2) Stop Screw O-ring	48 (1) Dual Stop Bolt
09 (2) Spring Holder	30* (2) Stop Screw O-ring	49* (1) Dual Stop O-ring
10* (1) Guide Band	34 (2) Stop Screw Washer	50* (1) Dual Stop Washer
11* (2) Piston Guide	35 (1) Spring Clip	51 (1) Dual Stop Lock Nut
12 (1) Lower Bearing	36 (8) End Cap Bolt	52 (1) Dual Stop Nut Cover
20* (1) Upper Bearing	37 (2) Limit Stop Bolt	

* Contained in Repair Kit

A2500 to A4000 Parts List



- 01 (1) Body
- 02 (2) Piston
- 03 (2) D-A End Cap
- 04 (2) S-R End Cap
- 05 (1) Pinion
- 06 (2) Gear Rack
- 08 (0 to 14) Coil Spring
- 09* (1) Lower Bearing

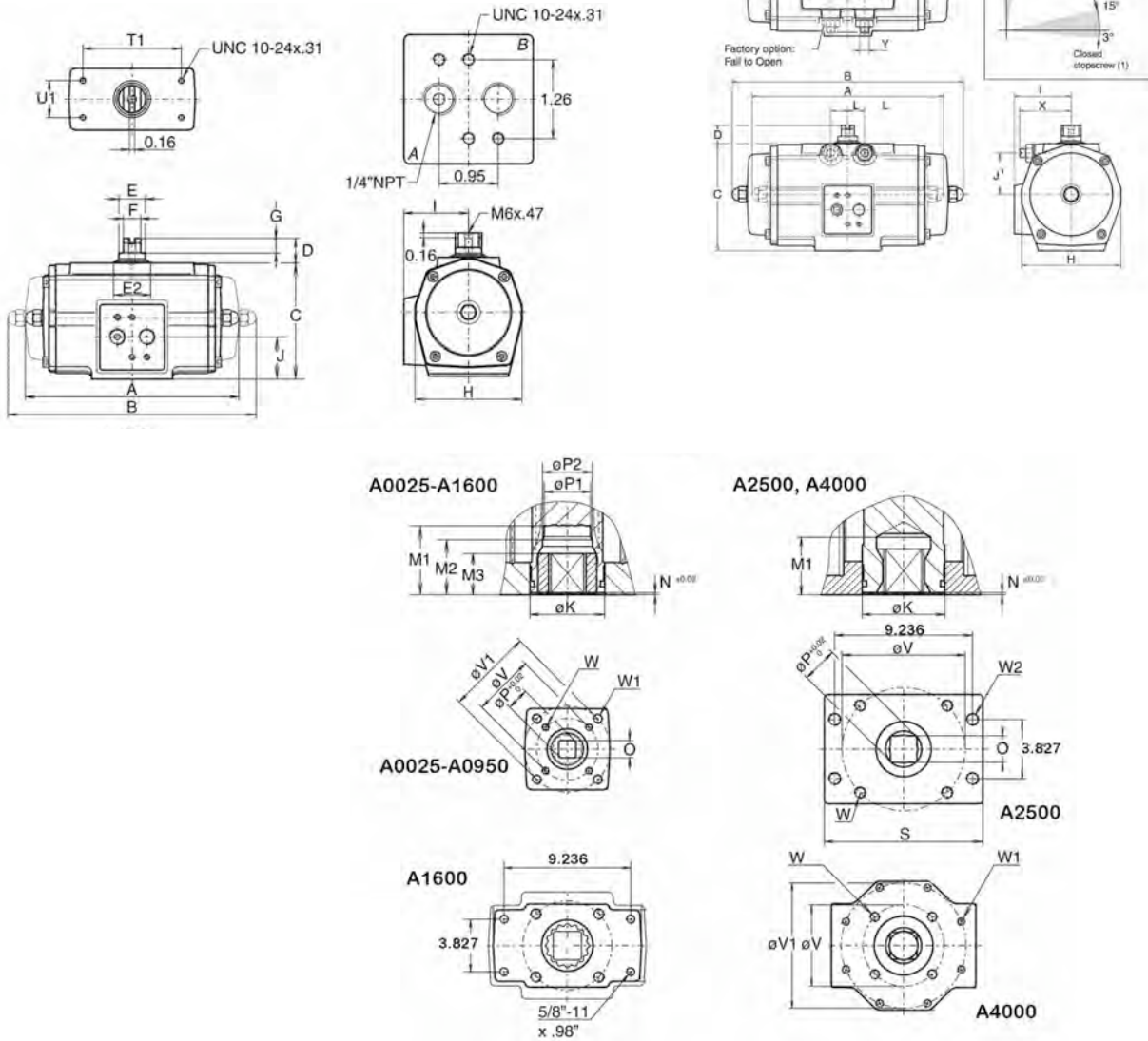
- 10* (1) Upper Bearing
- 14* (2) Piston Guide
- 15* (2) Heel Guide
- 16* (2) Piston O-ring
- 17* (2) End Cap O-ring
- 18* (1) Lower Pinion O-ring
- 19* (1) Upper Pinion O-ring
- 20* (1) Spring Clip

- 21* (1) Thrust Washer
- 23 (2 or 4) Rack Capscrew
- 24 (8 or 20) DA End Cap Bolt
- 25 (8 or 20) SR End Cap Bolt
- 26 (2) Port O-ring

* Contained in Repair Kit

Actuators and Controls

Dimensional Data



Rack & Pinion Actuator Envelop Dimensions

(Inches)	Overall Length	Overall Length	Body Height	Body Width	Solenoid Pad Offset	Port Location	Adjustable Closed Stop	Adjustable Closed Stop	Stop Size	Stop Protrusion
	A (DA)	B (SR)	C	H	I	J	J1*	L*	Y*	X Max*
A0025	6.26	6.77	3.15	2.91	1.81	1.26	1.11	0.45	1/4"-20	1.63
A0040	7.09	8.03	3.66	3.39	2.09	1.32	1.38	0.61	5/16"-18	1.91
A0065	7.83	9.80	4.13	3.86	2.26	1.54	1.57	0.61	5/16"-18	1.91
A0100	8.70	10.51	4.65	4.25	2.48	1.59	1.72	0.73	3/8"-16	2.30
A0150	10.00	12.20	5.51	4.76	2.76	1.59	1.92	0.97	3/8"-16	2.64
A0200	11.40	14.17	5.63	5.04	2.87	1.99	2.12	0.97	1/2"-13	2.91
A0350	12.01	15.24	7.13	6.81	3.71	2.85	2.85	0.97	1/2"-13	3.31
A0600	15.24	18.78	8.66	8.15	4.45	3.33	3.50	1.63	5/8"-11	4.51
A0950	16.69	20.35	10.20	9.09	4.96	4.15	4.03	1.63	5/8"-11	4.51
A1600	20.31	25.08	11.69	10.43	5.59	4.74	4.50	1.87	3/4"-10	4.88
A2500	14.88	22.40	14.02	13.78	7.28	7.01	N/A	N/A	N/A	N/A
A4000	19.76	32.83	14.96	14.96	7.87	7.48	N/A	N/A	N/A	N/A

*Applies to double stop versions only

Rack & Pinion Actuator Drive Details

(Inches)	Bottom Pinion Diameter	Valve Stem Clearance	Insert or Adapter Height	Pinion Recess	Standard Square Output	Standard Square Output	Across Corners Diameter
	K	M1	M3	N	O max	O min	P1
A0025	0.94	1.36	0.67	0.04	0.437	0.433	0.555
A0040	1.30	1.36	0.67	0.04	0.555	0.551	0.713
A0065	1.30	1.36	0.67	0.04	0.556	0.551	0.713
A0100	1.50	1.36	0.79	0.06	0.753	0.748	0.992
A0150	2.17	1.97	0.79	0.04	0.753	0.748	1.004
A0200	2.17	1.97	1.16	0.06	0.871	0.866	1.100
A0350	2.17	1.97	1.16	0.06	1.068	1.063	1.425
A0600	2.68	2.05	1.16	0.06	1.068	1.063	1.425
A0950	2.95	2.52	1.95	0.06	1.424	1.417	1.898
A1600	3.74	3.23	2.30	0.06	1.817	1.811	2.370
A2500	3.35	2.60	N/A	0.12	1.817	1.811	2.370
A4000	4.72	3.03	N/A	0.06	2.173	2.165	2.843

Rack & Pinion Actuator Mounting Dimensions

(Inches)	Primary ISO "F" Pattern	Primary Bolt Circle	Primary Fastener	Secondary ISO "F" Pattern	Secondary Bolt Circle	Secondary Fastener
		V	W		V1	W1
A0025	F04	1.65	1/4"-20 x .39"	N/A	N/A	N/A
A0040	F05	1.969	1/4"-20 x .39"	F07	2.756	5/16"-18 x .39
A0065	F05	1.969	1/4"-20 x .39"	F07	2.756	5/16"-18 x .39
A0100	F05	1.969	1/4"-20 x .39"	F07	2.756	5/16"-18 x .39
A0150	F07	2.756	5/16"-18 x .39	F10	4.016	3/8"-16 x .63"
A0200	F07	2.756	5/16"-18 x .39	F10	4.016	3/8"-16 x .63"
A0350	F07	2.756	5/16"-18 x .39	F10	4.016	3/8"-16 x .63"
A0600	F10	4.016	3/8"-16 x .63"	F12	4.921	1/2"-13 x .79"
A0950	F10	4.016	3/8"-16 x .63"	F14	5.512	5/8"-11 x .98"
A1600	F16	6.496	3/4"-10 x 1.14"	N/A	N/A	N/A
A2500	F16	6.496	3/4"-10 x 1.14"	N/A	N/A	N/A
A4000	F16	6.496	3/4"-10 x 1.14"	F25	10.000	5/8"-11 x .98"

Rack & Pinion Actuator Mounting Details

(Inches)	Namur Shaft Extension	Namur Shaft Diameter	Thrust Bearing Diameter	Namur Shaft Flats	Namur Flat Length	Namur Bolt Pattern	Namur Bolt Pattern
	D	E	E2	F	G	T1	U1
A0025	0.79	0.63	0.91	0.39	0.47	3.15	1.181
A0040	0.79	0.87	1.18	0.55	0.47	3.150	1.181
A0065	0.79	0.87	1.18	0.55	0.47	3.150	1.181
A0100	0.79	0.87	1.18	0.55	0.47	3.150	1.181
A0150	0.79	1.42	1.77	0.75	0.47	3.150	1.181
A0200	0.79	1.42	1.77	0.75	0.47	3.150	1.181
A0350	0.79	1.42	1.77	0.75	0.47	3.150	1.181
A0600	1.18	2.17	2.56	1.42	0.39	5.118	1.181
A0950	1.18	2.17	2.56	1.42	0.39	5.118	1.181
A1600	1.18	2.52	2.95	1.42	0.39	5.118	1.181
A2500	1.18	2.17	2.56	1.42	0.39	5.118	1.181
A4000	1.18	2.52	3.15	1.42	0.39	5.118	1.181