"Apollo"® Valves

actuation

PNEUMATIC ACTUATORS
DOUBLE ACTING D-2
SPRING RETURN D-2

ELECTRIC ACTUATORS D-3

ACTUATION ACCESSORIES D-4

section D

PNEUMATIC RACK & PINION ACTUATORS

5 YEAR WARRANTY

TORQUE RANGE
- Double-Acting: 119 to 38510 lbf-in (13.4 to 4338 Nm) at 80 psig (5.5 barg)
- Spring-Return: 41 to 15867 lbf-in (5 to 1793 Nm) spring end torque at maximum spring set.

PRESSURE RANGE
- Double-Acting: 29 to 120 psig (0.2 to 8.3 barg)
- Spring-Return:
  87 to 120 psig (6 to 8.3 barg), with maximum spring set
  43.5 to 120 psig (3 to 8.3 barg), reduced spring quantity

PRESSURE MEDIA
- Air, dry, or lubricated and inert gases
- Dew point at least 10K below ambient temperature
- For sub-zero applications, take appropriate measures
- Mentioned pressure levels are "gauge pressures". Gauge pressure is equal to absolute pressure minus atmospheric pressure..

FINISH
- Body: Chromated and polyurethane powder coated
- End Caps: Chromated and polyurethane powder coated
- Pistons: Chromated
- Pinion: Hard anodized
- Fasteners: Stainless steel or Deltatone® coated

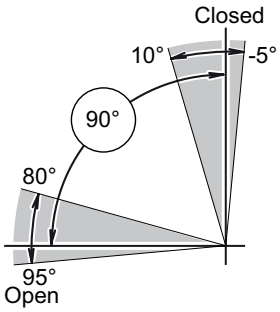
LUBRICATION
- Castrol high temperature grease (or equivalent)

CYCLE LIFE
- Normal working life is 500,000 cycles according to EN15714-3, where 1 cycle is 1 open stroke and 1 close stroke

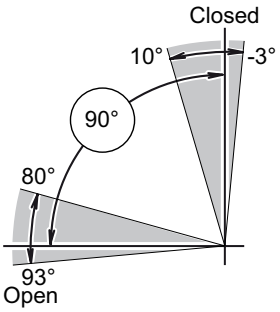
TEMPERATURE RANGE
- Standard: -4°F to 176°F (-20°C to 80°C)
- Option:
  Low temperature: -40°F to 176°F (-40°C to 80°C)
  High temperature: +14°F to 250°F (-10°C to 120°C)

ANGLE OF ROTATION
- Factory set at 90°
- Adjustable range:
  Size 0025 to 0600: -5° to +10° and +80° to 95°
  Size 0950 to 4000: -3° to +10° and +80° to 93°

Size 25 - 600



Size 950 - 4000



COMPLIANCE TO INTERNATIONAL STANDARDS
- Valve flange: ISO 5211
- Solenoid flange: VDE/VDI 3845 (NAMUR)
- Accessory flange: VDE/VDI 3845 (NAMUR)
- European Directives: ATEX, PED, & Machinery Directive
- SIL 3 rated according to IEC 61508-1-7:2010
- EAC Custom Union: Compliance to Russian TR010 & TR012

PART NUMBER MATRIX

A	S	0100	N	04	A	C	A
PREFIX	ACTION	SIZE	SEAL OPTION	SPRING SET	INSERTS	FAIL POSITION	REVISION
A	D - DOUBLE ACTING	0012	N - NITRILE NORMAL TEMP RANGE: -4°F - 175°F	00 (DA)	A - STANDARD SQUARE	C - FAIL CLOSED (FC)	A
	S - SPRING RETURN	0025		02	B - WITHOUT INSERT	F - FAIL OPEN (FO)	
	K - KIT	0040		03		D - NO SPRING (DOUBLE ACTING FAIL LAST POSITION)	
		0065	H - FLUOROCARBON HIGH TEMP RANGE: -4°F - 250°F	04			
		0100		05			
		0150		06			
		0200	L - SILICONE LOW TEMP RANGE: -40°F - 175°F				
		0350					
		0600					
		0950					
		1600					
		2500					
		4000					

EXAMPLE:
AS0100N04ACA = Spring Return, 0100 Size, Nitrile Seals, 04 Spring Set, Standard Square Drive, Fail Closed

AE SERIES
ELECTRIC ACTUATOR

Ruggedly built and designed for easy installation, new Apollo AE Series electric actuators deliver the most standard features and performance in their class. **Now CSA listed all sizes as standard.**

FEATURES FIVE OUTPUT TORQUES, ONE HOUSING
- 200, 400, 600, 800 and 1,000 in-lb
- Long Service Life
- Anodized Die Cast Aluminum Housing
- Fiberglass Reinforced Nylon Cover Resists Corrosion
- Nitrile Gasket and Seals Cover all Penetration Points in Housing and Cover
- Precision Cut and Heat Treated Alloy Spur Gears
- Permanently Lubricated Enclosed Gear Train
- NEMA 4, 4X

EASY TO USE
- Two Separate 1/2" NPT Conduit Entrances for Easier Wiring and Signal Separation
- 12-Position Pre-Wired Terminal Strip Includes Standard Connections for Remote open/closed position indicators; Lots of Room for Wiring Options
- Unrestricted Mounting Orientation
- Built-In Thermal Overload Protection in all AC Motor Actuators
- Limit Switches Have an 11 Amp Rating at 115 VAC
- High Visibility Valve Position Indicator Standard on all Models

MANY STANDARD FEATURES
- Stainless Steel Push-and-Turn Manual Override Shaft, Position Indicator Shaft and Female Output
- ISO 5211 F07 Drive Output Reduces Inventory of Mounting Kits
- 115 AC & 220 AC Models Feature a 25% Duty Cycle Below 100˚F (24AC — 20% Duty Cycle Below 100˚F)
- 12 and 24 DC — All DC Voltage Models Provide 100% Duty Cycle for 1 Hour After Which DC Motor is Reduced to 80% Duty Cycle
- Reversible Rotation

BROAD TEMPERATURE RANGE
- Operates From -40˚F (When Equipped with 15 Watt Heater and Thermostat) to 150˚F

AVAILABLE OPTIONS
- Actuators can be Ordered with One, Two or Three Additional Limit Switches
- For Low Temperatures, Actuators Can Be Equipped With A Thermostatically Controlled Heater Element
- Motor Brake is Necessary When Mounting Actuator to a Butterfly Valve

4-20MA POSITIONER FEATURES (P - OPTION)

ADVANCED PROTECTION FEATURES
- Stall Detection - Motor Will Not Burn Out from Stalling
- Fault Signal - Fault LED on DHC-100 front panel
- Duty Cycle Protection:
  - Allows Actuators Rated for 25% Duty or More, to be Safely Modulated
  - Activates Prior to Tripping of Thermal Overload Protector, which Prevents Long Shut Down Periods due to tripping Thermal Overload Protector; Allows the Actuator to Continue to Move to Set-Point at a 25% Duty Cycle Speed

PERFORMANCE FEATURES
- High Resolution (± 0.1°) - 450 Points of Resolution on a 1/4 Turn Valve
- Dynamic Braking - Stops Motor Before Changing Actuator Direction and before Mechanical Brake Engages, which Reduces Brake Wear
- Adaptive Control - Designed to Maintain High Resolution and Accuracy by Continuously Monitoring and Compensating for Actuator Backlash, Motor Coast, and Load Changes to Eliminate Positioner Deadband

4-20MA POSITION TRANSMITTER FEATURES (T - OPTION)
- High Resolution Feedback Transmitter:
  Provides Voltage or mA Output that can be set for any Range 0 to 10 VDC in 0.0016 V steps or 0 to 20 mA in 0.0031 mA steps)
- Auto/Manual Station (Local Control Unit - LCU)
- Polarity Detection

AE -	400 -	3	BF
PREFIX	TORQUE (IN - LB)	VOLTAGE	OPTIONS
AE	200	1 - 115 VAC	0 - STANDARD
	400	2 - 24 VAC	A - ONE EXTRA SWITCH & CAM*
	600	3 - 220 VAC	B - TWO EXTRA SWITCHES & CAMS*
	800	4 - 12 VDC	C - THREE EXTRA SWITCHES AND CAMS*
	1000	5 - 24 VDC	D - HEATER AND THERMOSTAT (15 WATT)
	ENTER ALL DIGITS OF TORQUE VALUE		F - MOTOR BRAKE (115 VAC & 24 VAC ONLY)
			H - TROPICAL HEATER (15 WATTS)
			P - POSITIONER 4-20 MA
			T - TRANSMITTER 4-20 MA

Note: AE will always be the first two characters of the part number, all digits from torque value must be entered into part number (i.e. 400, 1000, etc.) Only use one digit for voltage depiction (i.e. 1-5). For the options listing you may use more than one character, up to three, (i.e. O, AD or BD etc.)

1 Year warranty on positioner & positioner with transmitter
Transmitter available with (P) positioner option only
Positioner & transmitter are not CSA listed
** Not available with "P" option*

EXAMPLE
AE-400-2BF:
400 in-lb.; 24 VAC; 2 extra switches and cams, motor brake

AE-1000-1D:
1000 in-lb.; 115 VAC; Heater and thermostat

ACCESSORIES

VALVE POSITION MONITORS

Here's the ultimate in valve monitoring: Position monitors feature a high visibility, color-coded indicator to display valve position. All monitors are designed to correspond to the latest NAMUR standard for actuator/position monitoring units. Plated steel or stainless steel mounting kits are available to provide a pre-engineered mounting solution for maximizing position monitor performance and direct mounting to actuators. Multiple brands available.

SOLENOIDS

Apollo actuators can be supplied with solenoids manufactured by AVC (Automatic Valve Company). Our 3/4 way, field convertible, direct mount (NAMUR pattern) solenoid valves feature a variety of interchangeable integrated molded coils. They're compatible with both spring return and double acting actuators.

POSITIONERS

Apollo valve positioners are excellent tools for increasing the gain of your valve package, often reducing your actuator size due to your increased ability to accurately control higher air deliveries, and the flexibility to add options and accessories to complete your control package's performance.

Their simple design makes PMV positioners (shown here) easy to understand, calibrate and repair. Rugged construction provides operation in a variety of tough applications. Compact size minimizes space requirements. A complete package means the user can select the right positioner for his application. A bright indicator makes it easy for operators to visually check the valve position. Spool valve design requires very little maintenance. The electro-pneumatic unit eliminates the need for an extra product and additional connections. PMV positioners are proven products recognized for providing years of reliable service. Other brands are also available from your Apollo distributor.

Apollo offers both pneumatic and electro-pneumatic positioners as standard. Pneumatic positioners may be used on either double acting or spring return actuators. The anodized aluminum housing provides excellent product integrity and good corrosion resistance. Options include special coatings, stainless steel housings and a variety of accessory items which can help you meet your most demanding control applications.