



## 400 Series Pneumatic Actuators for 89 Series Ball Valves

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### FEATURES

- Compact, Lightweight Aluminum Body and Bracket featuring both Internal and External Teflon®-Impregnated Hard Anodized Surfaces
- Stainless Steel External Trim & Viton® O-rings Standard
- Direct Valve Stem Coupling to Actuator Shaft Minimizes Backlash
- Manual Override
- Available with Integral NAMUR Pilot Valve or can be Remotely Piloted
- Available with Limit Switches
- Easily Visible Open / Shut Position Read Out



**G**emini's 400 Series Pneumatic Actuators were the first in the ball valve industry to offer direct actuator to valve mounting. This patented design eliminated the need for bulky bracketry which lacked precise alignment and rigidity required for long trouble free service life.

Gemini Actuator mounting is the key element of our pneumatically actuated ball valves. A quality valve and actuator, poorly mounted, results in an inferior actuated valve. The Gemini coupling eliminates this possibility. The actuator shaft is precisely coupled directly to the valve

stem, thereby eliminating misalignment and backlash. The valve stem nut is fixed within the actuator shaft. These features, combined with a rigid mounting bracket, result in a pneumatically actuated ball valve which minimizes backlash, assures optimum stem seal life and prevents any possibility of stem nut back off.

Designed to operate on 50 - 125 psi for double-acting models and 75 - 125 psi for spring-return models. Index (or Cycle) time is approximately 1/2 to 1 second depending on model.

The 400 Series Pneumatic Actuators are suitable for Gemini's 89 Series

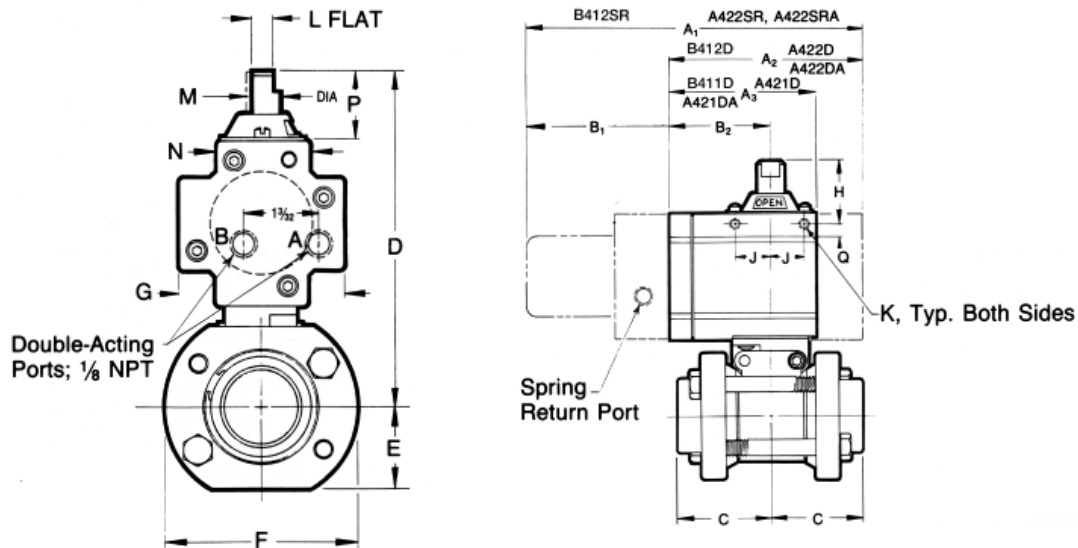
Ball Valves which are now part of our Serviceable Series.

The later introduction of the General Industrial Series Pneumatic Actuators (500 Model) provided a cost savings over the 400 Series by manufacturing the body from a standard shape extrusion and providing a simplified visual position indicator. The 400 Series Pneumatic Actuators today continue to have a following of loyal customers based upon it's history of performance and customer satisfaction.

## Actuator Dimensions

AIR SUPPLY 75 - 125 PSI						AIR SUPPLY 50 -125 PSI																	
VALVE SIZE			ACTUATOR MODEL (SPRING-RETURN)	ACTUATOR MODEL (DOUBLE-ACTING)	ACTUATOR MODEL (DOUBLE-ACTING)	APPROXIMATE DIMENSIONS (INCHES)																	
STANDARD PORT	FULL PORT	PORT SIZE				A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	B <sub>1</sub> SPRING RETURN	B <sub>2</sub> DOUBLE ACTING	C	D	E	F	G	H	J	K	L	M	N	P	Q
½	¼ & ⅜	0.5	B412SR	B411D	B412D	7.64	3.64	2.73	5.85	1.85	1.59	4.11	1.09	2.50	2.38	1.25	.66	#10-24	.31	.47	1.31	1.01	.19
¾	½	0.6									1.69	4.20	1.17	2.75									
1	¾	0.8	A422SRA	A421DA	A422DA	11.89	5.70	4.34	9.11	2.92	1.87	6.53	1.43	3.25	3.87	1.96	1.06	5/16-18	.50	.81	2.12	1.59	.27
1¼	1	1.0	A422SR	A421D	A422D	11.89	5.70	4.34	9.11	2.92	2.28	7.54	1.60	3.75	3.87	1.96	1.06	5/16-18	.50	.81	2.12	1.59	.27
1½	1¼	1.25									2.33	7.87	1.92	4.50									
2	1½	1.50									2.56	7.98	2.00	4.75									

Valve and Actuator specifications are subject to change without notice and without obligation on the part of the manufacturer.



## Actuator Specifications

### Temperature

Pneumatic Actuators are designed to operate in ambient temperatures between -20° F (-28.0°C) and +350°F (+175°C). Care must be taken to assure that the moisture content of the air supply is sufficiently low to prevent icing within the actuator.

### Air Supply

Sufficient air delivery must be available at the actuator to ensure dependable operation. The following precautions should be observed:

Air supply should be clean and dry. When dirty or wet air is a problem; a filter / separator should be specified; these units are most effective when

installed as closely as possible to the actuator. A filter, when used, should permit a minimum flow of 4 scfm at an upstream pressure of 60 psi.

Eliminate severe restrictions to air flow (certain solenoid valves & fittings). The most restricted passage must have an area no smaller than .003" square, the area of 1/16" diameter orifice. If more than a single actuator is to be supplied by an individual pilot, the minimum passage requirement applies per actuator.

Tubing: For short runs up to 5 feet 5/32" I.D. is suitable, 1/4" I.D. will serve up to 30 feet. For longer runs, use 3/8" I.D. or larger.

### Accessories

Solenoid pilot valves and limit switches are available. Please see our literature or contact us direct.

**Port Connections:** 1/8" N.P.T.

### Materials of Construction

**BODY, END CAPS:** : Aluminium with Teflonâ Imprenated Hard Anodized (PolyLube®) Sufaces

**SPRING MODULES:** Aluminium with Teflonâ Imprenated Hard Anodized (PolyLube®) Sufaces

**SHAFT / DRIVER & EXTERNAL TRIM:** 300 Series Stainless Steel

## How To Configure Model Number

### Manually Actuated Valve

Select Valve Size and Product Code. Example: **1SE F6-0.8-89-6-RTV-6-SL**

Center Section Only. Example: **0.8-89-6-RTV-6-SL** Pipe Connector Only: Example: **1SE F6-0.8-89-6**

	Product Code							
Size	Pipe Connection	Flange & Pipe Connector Material	Port Size	Standard	Full	Center Section	Optional Special Features	Operator (Handle)
1/4	SE Female Screwed End N.P.T.	F6 316 / CF8M Stainless Steel	0.5	1/2	1/4 & 3/8	89-6-RTV-6 Stainless Steel. Seats & Stem Seal Glass Filled Reinforced P.T.F.E. Body Seals Viton.	B Ball Cavity Pressure Equalizing Vent 'B' Style	SL Stainless Lever
8	SW Socket Weld		0.6	3/4	1/2	89-6-RTT-6 Same as above but with P.T.F.E. (Teflon) Encapsulated Viton Body Seals.	S Special - Consult Factory	Z Actuator Drive Key All Port Sizes Except 0.8
1/2	TSW Tube Socket Weld		0.8	1	3/4	Note: Other Optional Body Seal Materials Available - Please Consult Factory		Z1 Actuator Drive Key Port Size 0.8
3/4			1.0	1-1/4	1			
1			1.2	1-1/2	1-1/4			
1-1/4			1.5	2	1-1/2			
1-1/2								
2								

### Pneumatically Actuated Valve

1. Take **Manually Actuated Valve Model** and omit Operator . Handle-Type. Example: **1SE F6-0.8-89-6-RTV-6-**
2. Based upon the Valve Port Size Select Actuator Type and add to Valve Size & Model.

Example: **1SE F6-0.8-89-6-RTV-6-B412D**

NOTE: For Double-Acting Actuators, models which use 50-125 psi are recommended.

Valve Port Size	Actuator Type Air Supply Available		
	Double Acting		Spring Return
	50-125 psi	75-125 psi	75-125 psi
0.5	<b>B412D</b>	<b>B411D</b>	<b>B412SR</b>
0.6	<b>B412D</b>	<b>B411D</b>	<b>B412SR</b>
0.8	<b>B412D</b>	-	<b>A422SR</b>
1.0	<b>A422D</b>	-	<b>A422SR</b>
1.2	<b>A422D</b>	-	<b>A422SR</b>
1.5	<b>A422D</b>	-	<b>A422SR</b>

## How To Configure Model Number (continued)

### Pneumatically Actuated Valve - Optional Accessories

1. Optional Accessory: Take the **Pneumatically Actuated Valve Model** and add suffix N with GP Series and or Limit Switch or both. NOTE: Actuator must be ordered / supplied with optional NAMUR Interface Suffix **N**

Examples: **1SE F6-0.8-89-6-RTV-6-B412DN-4GP-SC07D-120VAC-DS**  
**1SE F6-0.8-89-6-RTV-6-B412DN-4GP-SC07D-120VAC-DS-LS-1**  
**1SE F6-0.8-89-6-RTV-6-B412D-LS-1**

Optional Actuator Accessory						
GP Series NAMUR Integral Solenoid Valve						Limit Switch
Type	Coil Style	Voltage Code	Connection Type	Voltage	Electrical Connector	
4GP (use with Double-Acting)	SC Standard	07 120VAC	D Mini DIN	VAC	DS DIN X Strain	LS-1
Spring-Return Consult Gemini Valve	MR Manual Override	03 24VDC	L* Wire Leads	VDC	DC DIN X 1/2" Conduit	
	HL* Hazardous Locations	02 12VDC			DA DIN X Field Bus M12	
		06 24VAC			DM10 DIN X Molded 10' Lead	
		08 240VAC			DM15 DIN X Molded 15' Lead	
					DML10 DIN X Molded LED 10' Lead	
	* HL Coil Style Only Offered in 120VAC Conduit Hub with 24" Leads					



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