TECHNICAL DATA SHEET
A500 Series Pneumatic Actuators

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DESCRIPTION

500 Series pneumatic actuators are the latest in compact rack and pinion valve automation from Gemini Valve. The A500 features 50 psi operation on all models and sizes and includes many industry standards features such as NAMUR interfaces and ISO mounting options.

MATERIALS OF CONSTRUCTION

BODY: Aluminium with Teflon® Imprenated Hard Anodized (PolyLube®) Sufaces

EXTERNAL HARDWARE: (Pinion Shaft, Driver, End Caps) 300 Series Stainless Steel

SPRING MODULES: A512SR Zytel ® Housing, A522SR Aluminium with Teflon® Imprenated Hard Anodized (PolyLube®) Sufaces, 300 Stainless Hardware

EXTERNAL TRIM: 300 Series Stainless Steel

RATINGS / SPECIFICATIONS

TEMPERATURE: -20 F to 350 F

POWER: 50 - 125 psi air. 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 free of moisture. 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 .012 inches square, the area of 1/8" 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.

RATINGS / SPECIFICATIONS (continued)

DUTY CYCLE: 100%

CYCLE TIME: (To Open or Close) Approximately 1/2 to 1 second*

*** -** Dependent upon actuator model, air pressure and delivery

TORQUE OUTPUT

Torque Output - in. - lbs.*

Model	50 psi	60 psi	70 psi	80 psi	90 psi	100 psi	Spring Stroke	
							Start	End
A512D	56	67	78	90	101	112	N/A	N/A
A512SR	50	60	70	82	94	105	100	56
A522D	180	225	270	360	405	450	N/A	N/A
A522SR	180	225	270	360	405	450	360	255

* - Approximate

CAUTION: Care must be taken to assure the output torque of the A500 Series Actuator selected is adequate to turn the valve or device to be operated. Note: Does not apply for mounting of Gemini Valves to A500 Series Actuators. Gemini Valve offers a selection chart for your convenience. See our literature for details. Note also; special sizing considerations should be given when a valve is handling suspended solids, abrasives, dirty media, oxygen and dry gasses.

MAINTENANCE

Gemini A500 Series Pneumatic Actuators are designed to be maintenance free and normally are replaced vs. repaired.

Double-Acting Models: For double-acting models, rebuilding of the actuator by our *Factory Authorized Service* Center may enable the actuator to be returned to service depending on the duty cycle the actuator has seen. The cost to rebuild the actuator is generally 50% of the cost of a new actuator. For details on this service please contact us. Additionally, for those customer desiring to replace 0-rings, gasket(s) and lubricant, we offer o-ring kits which contain these genuine factory components.

Spring-Return Models: For the A500 Series spring-return models, rebuilding of the actuator by our *Factory Authorized Service* Center may enable the actuator to be returned to service depending on the duty cycle the actuator has seen. The cost to rebuild the actuator is generally 50% of the cost of a new actuator. For details on this service please contact us. O-rings kits are not available for the A500 Series Spring Return models.

ACTUATOR TO VALVE MOUNTING INSTRUCTIONS

76, 82, 86 & 96 SERIES VALVES

These instructions detail the procedure for installing a Gemini A500 Series actuator on a drive-key equipped Gemini 76, 82, 86 & 96 Series ball valve. Valves may be purchased with the drive-key assembled or may be retrofitted with a drive-key conversion kit.

Instructions:

Assemble Bracket to Actuator

1. Position the actuator upright with driver and the A & B ports oriented as shown in Figure 1.

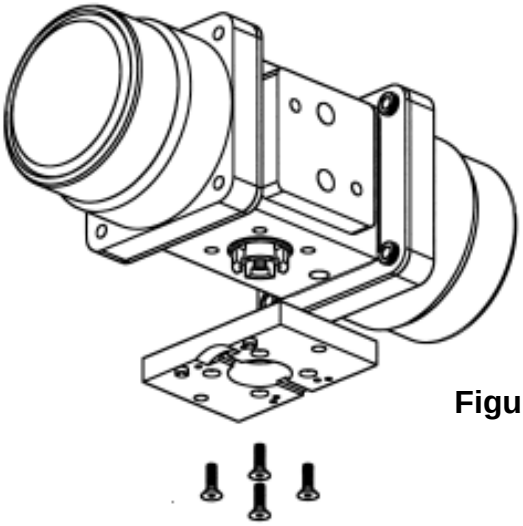


Figure 1

2. With the counter sunk holes exposed, position the bracket to achieve an inline or cross mounted actuator orientation as described below. Table 1 lists the valve condition at rest with respect to the Actuator Model # (See actuator nameplate to determine model number

Actuator Model	Mounted	Valve Condition at Rest
A512NO	Inline	Open
A512NO	Cross Mount	Closed
A512	Inline	Closed
A512	Cross Mount	Open
A522NO	Inline	Open
A522NO	Cross Mount	Closed
A522	Inline	Closed
A522	Cross Mount	Open

Table 1

a. Inline- (standard mounting for most actuators) The long axis of the actuator is in-line with the piping. The bracket should be oriented perpendicular to the actuator body. (See Figure 2)

b.Cross mounted- the long axis of the actuator is perpendicular to the piping. The bracket should be mounted parallel to the actuator body. (See Figure 3)

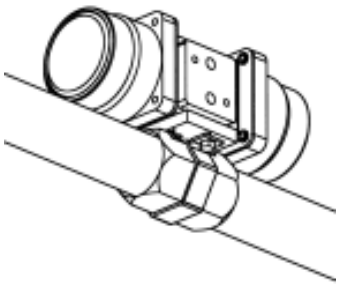


Figure 2

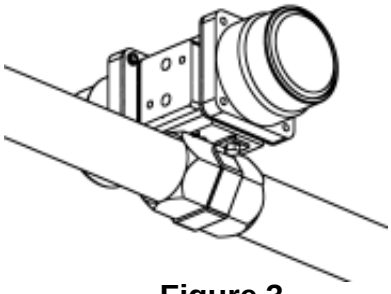


Figure 3

3. Install the 4 hex flat socket head mounting screws to (60 inches lbs. for A510 and 75 inch lbs. for A520 actuators) secure bracket to the actuator body. Important: To ensure positive fastening mounting screws and bracket counter sunk holes must be clean and dry.

ACTUATOR TO VALVE MOUNTING INSTRUCTIONS
76, 82, 86 & 96 SERIES VALVES(continued)

Assemble Valve to Actuator

IMPORTANT Note the red OPEN/SHUT indicator mounted on top of the actuator shaft and the position of the ball in the valve. The actuator should be mounted such that the red indicator is in-line with the valve body when the ball is in the open position, or across the valve body when the ball is in the closed position.

1. Rotate the valve stem so that it is in the corresponding closed or open position with regards to the actuator. The drive key on the valve should be perpendicular to valve body when valve is open and parallel when in the closed position.

2. Confirm proper position of the locator screws on the bottom of the bracket based on the size and series of the valve being mounted as Listed in Table 2.

3. Place the actuator, with the bracket attached, atop the valve so that the 12 point socket engages the stem nut, the shaft notch engages the drive-key and locator screws straddle the valve body hex (see Figure 4). If the locator screws do not span the valve properly (i.e. interfere with eyebrows or do not engage valve) turn valve 180 degrees.

4. Position the valve retaining strap over the valve and align with bracket holes. Secure strap with two hex head cap screws. Alternate tightening the strap bolts to obtain even tension on the strap and to avoid skewing. Do not over tighten. A gap should remain between strap and bracket when

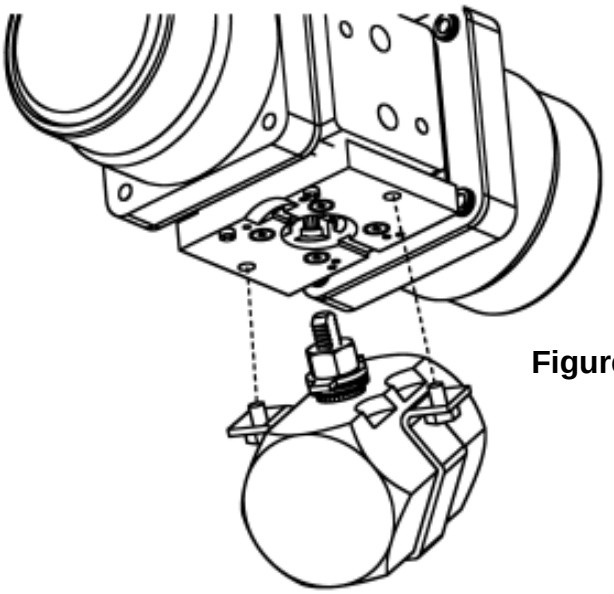
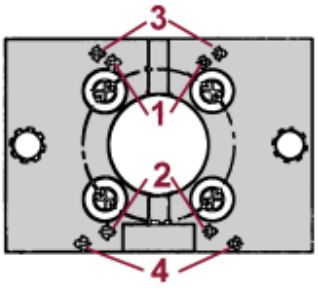
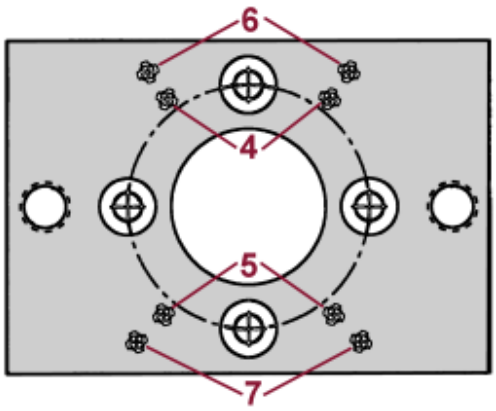


Figure 4

Actuator Series	Valve Size & Series				Locator Screw Mounting Pattern
	76	82	86	96	
A510	1/2	1/4, 3/8, 1/2	1/4 & 3/8	-	1
	3/4	3/4	1/2	-	2
	1	1	3/4	1/2	3
	1-1/4	-	1	3/4	4
A520	1-1/4	-	1	3/4	4
	1-1/2	-	1-1/4	1	5
	2	-	1-1/2	1-1/4	6
	-	-	2	1-1/2	7

Table 2





ACTUATOR TO VALVE MOUNTING INSTRUCTIONS

89 SERIES VALVES

These instructions detail the procedure for installing a Gemini A500 Series actuator on a drive-key equipped Gemini 89 Series ball valve.

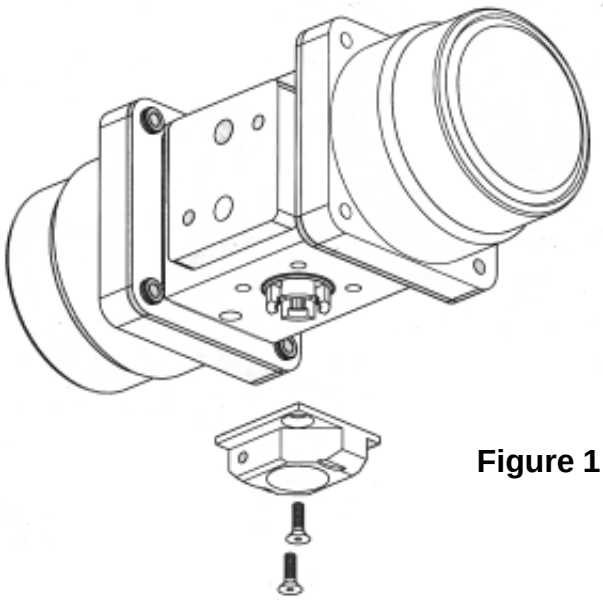


Figure 1

Instructions:

Assemble Bracket to Actuator

1. Position the actuator upright with driver and the A & B ports oriented as shown in Figure 1.

2. With the counter sunk holes exposed, position the bracket to achieve an inline or cross mounted actuator orientation as described below. Table 1 lists the valve condition at rest with respect to the Actuator Model # (See actuator nameplate to determine model number).

a. Inline- (standard mounting for most actuators) The long axis of the actuator is in-line with the piping. The bracket should be oriented perpendicular to the actuator body. (See Figure 2)

b. Cross mounted- the long axis of the actuator is perpendicular to the piping. The bracket should be mounted parallel to the actuator body. (See Figure 3)

3. Install the 2 hex flat socket head mounting screws to (60 inches lbs. for A510 and 75 inch lbs. for A520 actuators) secure bracket to the actuator body. Important: To ensure positive fastening, mounting screws and bracket counter sunk holes must be clean and dry.

Actuator Model	Mounted	Valve Condition at Rest
A512NO	Inline	Open
A512NO	Cross Mount	Closed
A512	Inline	Closed
A512	Cross Mount	Open
A522NO	Inline	Open
A522NO	Cross Mount	Closed
A522	Inline	Closed
A522	Cross Mount	Open

Table 1

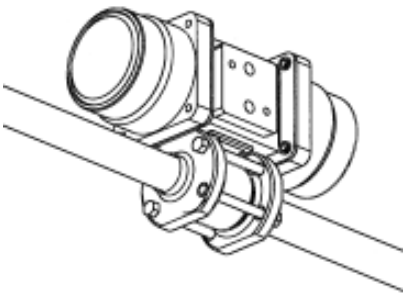


Figure 2

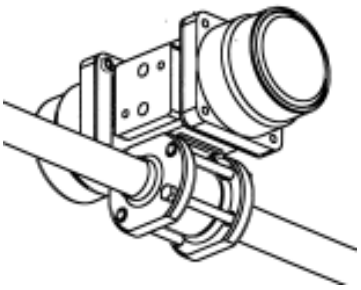


Figure 3

ACTUATOR TO VALVE MOUNTING INSTRUCTIONS

89 SERIES VALVES (continued)

Assemble Valve to Actuator

IMPORTANT! Note the red OPEN/SHUT indicator mounted on top of the actuator shaft and the position of the ball in the valve. The actuator should be mounted such that the red indicator is in-line with the valve body when the ball is in the open position, or across the valve body when the ball is in the closed position.

1. Rotate the valve stem so that it is in the corresponding closed or open position with regards to the actuator. The drive key on the valve should be perpendicular to valve body when valve is open and parallel when in the closed position.

2. Place the actuator, with the bracket attached, atop the valve so that the 12 point socket engages the stem nut, the shaft notch engages the drive-key and locator screws straddle the valve body hex (see Figure 4).

3. Install two socket head cap screws to secure valve to mounting bracket.

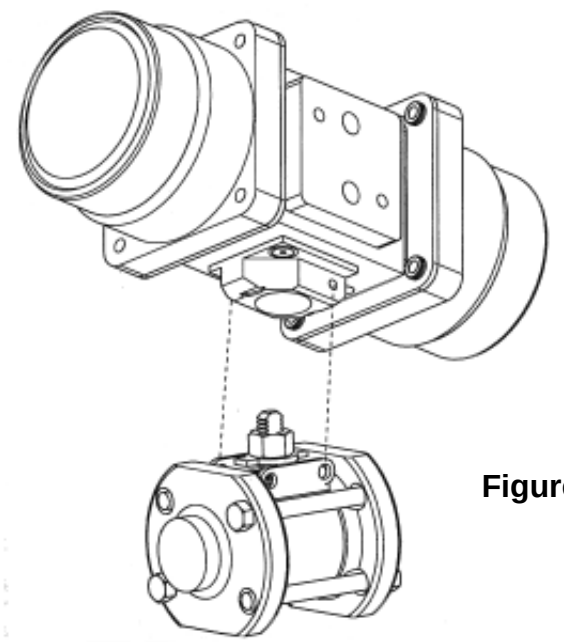


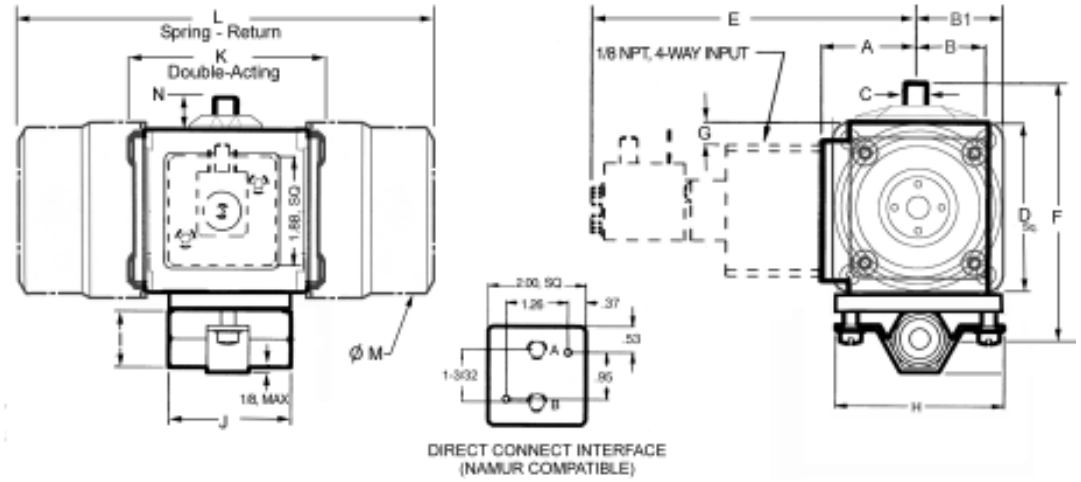
Figure 4

ACTUATOR TO VALVE SELECTION DATA

Actuator Models	Suitable for Valve Series & Size					
	76	82	86	96	89 (Port)	309
A512D (Double-Acting) A512SR (Spring-Return)	1/2	1/4 & 3/8	1/4& 3/8	-	0.5	1/2
	3/4	1/2	1/2	-	0.6	3/4
	1	3/4	3/4	1/2	0.8	-
	1-1/4	1	1	3/4	-	-
A522D (Double-Acting) A522SR (Spring-Return)	1-1/2	-	1-1/4	1	1.0	-
	2	-	1-1/2	1-1/4	1.2	-
	-	-	2	1-1/2	1.5	-

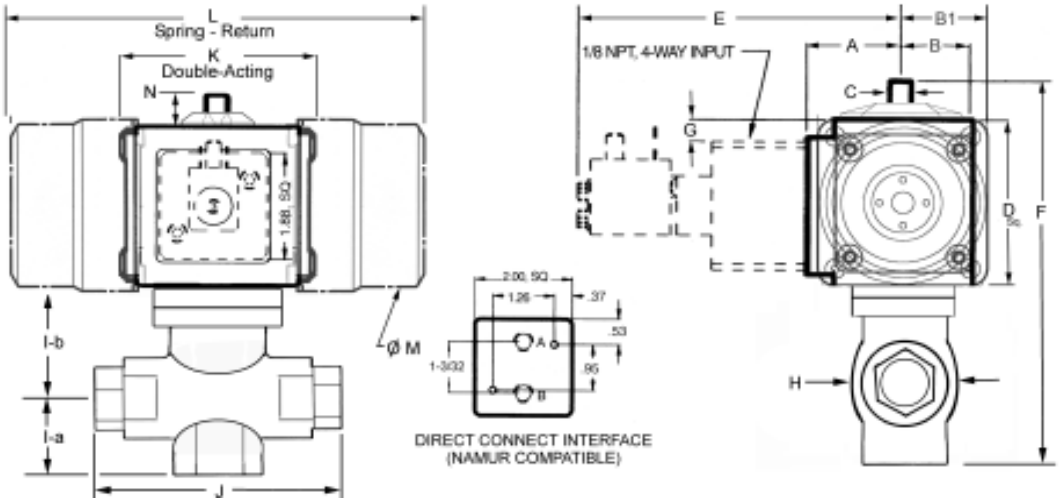
DIMENSIONS

76, 86 & 96 SERIES VALVES



Valve Size & Series			Actuator Model		Approximate Dimensions, Inches														
76	86	96	Spring Return	Double Acting	A	B	B1	C	D	E	F	G	H	I	J		K	L	M	N
															76	86/96				
1/2	1/4 & 3/8	-	A512SR	A512D	1.36	1.00	1.53	.31	3.06	4.67	3.88	.32	3.00	1.00	2.18	2.18	3.62	8.31	2.81	.57
3/4	1/2	-									4.06			1.18	2.22	2.61				
1	3/4	1/2									4.38			1.50	2.76	2.94				
1-1/4	1	3/4									6.44			2.00	3.02	3.32				
1-1/2	1-1/4	1	A522SR	A522D	1.87	1.55	2.25	.50	4.50	5.18	7.59	1.10	4.75	2.12	3.45	3.70	5.28	11.23	3.50	.82
2	1-1/2	1-1/4									8.09			2.62	4.04	4.25				
-	2	1-1/2									8.47			3.00	-	4.57				

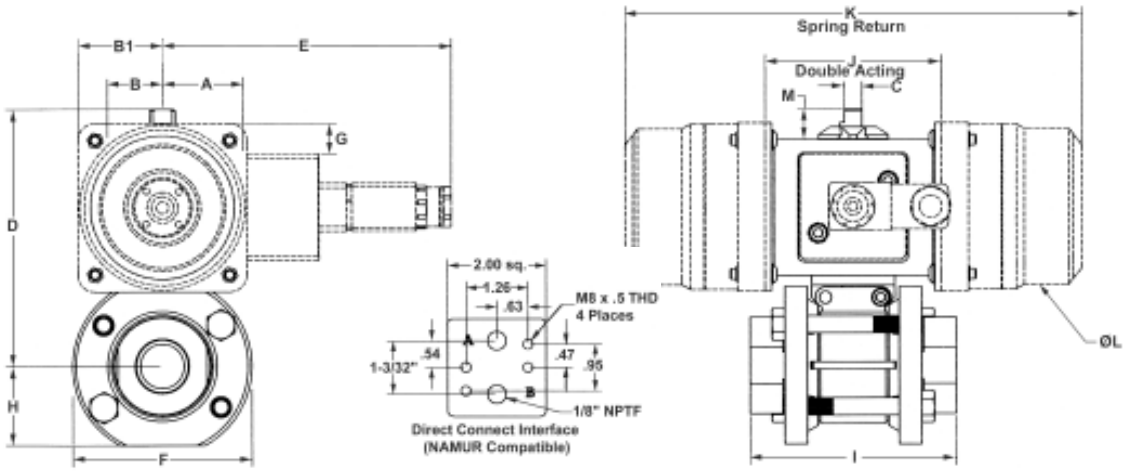
309 SERIES VALVES



Valve Size & Series	Actuator Model		Approximate Dimensions, Inches														
309	Spring Return	Double Acting	A	B	B1	C	D	E	F	G	H	l-a	l-b	J	K	L	M	N
1/2	A512SR	A512D	1.36	1.00	1.53	.31	3.06	4.67	5.77	.32	1.63	1.55	2.00	3.85	3.62	8.31	2.81	.57
3/4																		

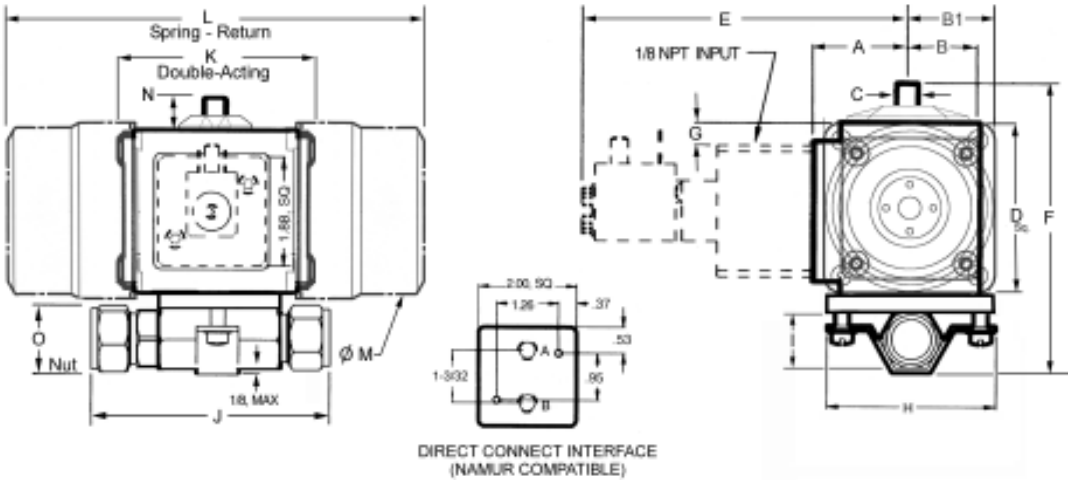
DIMENSIONS

89 SERIES VALVES



Valve Size		Spring Return	Double Acting	Approximate Dimensions, Inches													
Std. Port	Full Port			A	B	B1	C	D	E	F	G	H	I	J	K	L	M
1/2	1/4&3/8	A512SR	A512D	1.46	1.00	1.53	.31	4.33	4GP	2.50	.32	1.09	3.18	3.62	8.31	2.81	.57
3/4	1/2							4.41	4.67 (3GP)	2.75		1.17	3.38				
1	3/4							4.66	(4.50)	3.25		1.43	3.74				
1-1/4	1	A522SR	A522D	1.87	1.55	2.25	.50	6.67	4GP	3.75	1.10	1.60	4.56	5.28	11.23	3.50	.82
1-1/2	1-1/4							7.00	5.18 (3GP)	4.50		1.92	4.66				
2	1-1/2							7.12	(5.00)	4.75		2.00	5.12				

82 SERIES VALVES



Tube Size	Actuator Model		Approximate Dimensions - Inches															
	Spring Return	Double Acting	A	B	B1	C	D	E	F	G	H	I	J	K	L	M	N	O
1/4	A512SR	A512D	1.46	1.00	1.53	.31	3.06	4.67	4.51	.32	3.00	1.00	3.72	3.62	8.31	2.81	.57	9/16
3/8									4.51			1.00	3.70					11/16
1/2									4.61			1.00	3.94					7/8
3/4									4.91			1.19	4.17					1-1/8
1									5.37			1.50	4.92					1-1/2