General Industrial Series

Pneumatically, Electrically, and Manually Actuated Ball Valves

Suited for a wide variety of industrial and OEM applications that require positive, reliable on/off control.

Highlights

- Maintenance-Free
- 100% Bubble-Tight Tested
- Compact Size
- Optional Pilot / Solenoid Valves & Limit Switches
- Certain Materials NSF® Certified
- Durable Construction
- Reinforced P.T.F.E. (Teflon®) Seals
- Variety of Manual Handle Options
- Can Be Customized to Meet Specific Application Needs
- Size Range: 1/4" - 2" Female NPT Screwed End, Optional B.S.P.T.

Performance Engineered Automated Ball Valves

Designed and Tested, Manufactured and Assembled, Supplied and Supported, Direct from our USA Headquarters

Rev. 10/2020

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General Industrial Series SL02-2010

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Product Information

Ball Valves

Gemini's General Industrial Series Ball Valves are ideal for a wide variety of industrial and O.E.M. applications where reliable, positive on / off control is required. Each valve is manufactured to precise specifications using the latest manufacturing technologies and processes.

Valve body materials have the integrity of bar stock construction. Include; brass, carbon steel, 316 stainless steel, Alloy 20 and Monel. Reinforced P.T.F.E. (Teflon®) Seats and Stem Seal are standard to meet the widest variety of application medias and temperature ranges.

Valve body designs are single and two-piece. Single piece model 76 is the most compact with a reduced port construction. Two-piece body designs include model 86, the most popular being of a standard port construction, and model 96 for applications where flow is critical being of a full port construction.

Valves are offered in 1/4" - 2" NPT (National Pipe Taper) female screwed end. Full thread length compliance to ANSI B1.20.1 Specifications ensures ease of joint make-up without leaks. BSPT (British Standard Pipe Taper) and other end connections may be available upon request.

All valves feature a self wear compensating stem seal design which ensures long, leak-tight, maintenance free service. This unique design is also temperature compensating ideal for medias the fluctuate rapidly such as steam or Co2.

Gemini Industrial Series ball valves feature machined seats and seals. This provides an optimum sealing surface which enables a excellent vacuum rating of 20 microns. If you have further questions regarding how are valves will preform in vacuum applications or any other application please reach out to us to consult with one of our valve specialists.

Manual handle options include:

Lever Handle

Considered the standard handle option. Manufactured from carbon steel with zinc plating for corrosion resistance. Also offered in 300 Series stainless steel. Handle is secured by Flex-Loc® brand locking nut which ensures handle will not loosen during service.

Latching-Lockable Lever Handle

The latching-lockable handle option provides a lever handle which prevents accidental opening or closing. A simple but positive thumb motion is required to pull the spring loader slider back until it clears the latch stop mounted on the valve, before the valve can be turned from either fully opened or closed position. A hole in the slider makes it possible to lock the handle in either the opened or closed position with a locking device such as a padlock. A padlock with any size shackle up to 5/16" diameter assures positive lock out.

Oval Handle

The Oval Handle option is ideal for applications where valve(s) are installed in close proximity to other devices or equipment and, or to minimize accidental opening or closing of the valve.

Wing Handle

Wing Handle option has the smallest handle indexing turning radius. Also ideal for linkage attachment for remote operation.

OEMs with a special need? Contact us with the details and if we're a good fit we can design, prototype, and manufacture a custom solution to best meet your application needs..

Product Information

Pneumatic Actuators & Accessories

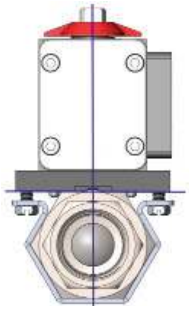
Gemini's General Industrial Series Pneumatic Actuators represent the combination of the latest in machining technology and our more than thirty five years experience in producing high performance pneumatic actuators.

Double-Acting

Spring-Return

Two pneumatic styles are offered: Double-acting, which uses air to move pistons in both directions and Spring-return, which uses air to move pistons in one direction and springs in the other. Double-acting is the most popular since it offers a compact size and longest service life at the lowest cost.

Pneumatic actuators feature a special rack and pinion design made possible through our unique manufacturing techniques. The results; a compact ball valve actuator which is efficient and trouble free. Index (or Cycle) time is approximately 1/2 to 1 second depending on model. Deigned to operate using an air supply of 60 - 125 psi. The air can be delivered by direct mounting pilot valves such as the Gemini model GP having NAMUR interfaces or from remote pilot valves connected via means of 1/8" NPT female threaded orifices in the actuator face plates.



The mounting system precisely couples the actuator drive shaft to the stem. Additionally the valve stem nut is fixed within the actuator shaft. These features combined with a rigid mounting bracket, results in a pneumatically actuated ball valve which minimizes backlash, assures optimum stem seal life, and prevents any possibility of stem nut back off.

Gemini's Industrial GP Series Solenoid Valves utilizes a flush mount NAMUR compatible interface to provide a space efficient design which quickly and easily mounts to Geminis' Industrial Series Pneumatic Actuators.

Constructed from corrosion resistant materials including a Teflon impregnated, hard coat anodized aluminum body, stainless steel spool and Zytel operator body to ensure long, trouble free life in a variety of environments. A single air connection and DIN style electrical connection are all that is required to complete the automated ball valve package. The Mini-DIN style operating coil is available in a variety of popular voltages and can be adapted to conduit, strain relief, wire lead, or automotive style connections.

Limit switches are available for all models to remotely denote valve position or to connect with other devices. The limit switch utilizes two mechanical S.P.D.T. (Single-Pole, Double-Throw) microswitches which respond to actuators' fully open or fully closed position by mean of a cam fitted to the actuator top shaft. U.L.® Listed as Industrial Control Equipment for use in Hazardous Locations, Class I, Groups B, C, & D and Class II, Groups E, F, & G

Special brackets and shaft extensions are available for mounting the Gemini's Limit Switch, auxiliary equipment including positioners and signal transmitters, requiring NAMUR interface compatibility.

Product Information

Electric Actuators

Gemini's Industrial Series Electric Actuators have been designed for durability and longevity. Ideal for automation where no air supply is available for a pneumatically actuated valve, or if slower index time is needed. Example; high velocity / pressure, actuation can minimize or prevent 'water hammer,' which occurs if a valve closes quickly at the end of a pipeline system.

Actuators use voltage to power valve on / off. Once actuator reaches full open / close position, internal cam switches turn off motor. Wiring terminal block enables position feedback with motor voltage. An optional set of limit switches are available to connect to voltages other than motor (voltage) for position feedback or to power other devices. Available in 120VAC, 12 & 24VDC. Index (or Cycle) time is approximately 6 seconds. UL®508 Listed (AC Models Only).

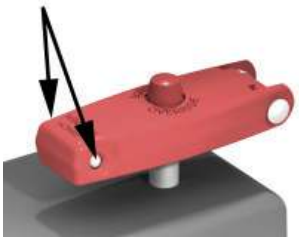
The cast aluminum base dissipates internal heat though a special thermal conductor that pulls heat from the motor and allows for cooler operation during high duty cycle operation.

The permanently lubricated drive train and brushless motor is housed within a Viton® sealed enclosure rated to NEMA 4X to protect against moisture and contamination. As a final measure of electrical protection all AC motors utilize auto-resetting thermal overload circuits. Teflon® coated cast aluminum base, Dupont® FR50 Cover and Stainless Steel Trim for Maximum Corrosion Resistance.

The actuator features a simple push-button operated override with exclusive fold-out lever handle. The push-button manual override system allows the user to easily disengage the electric drive gear train for manual operation of the actuator / ball valve. All external power must be off prior to using the manual override feature. The actuator manual override handle can be used in the closed or open (lever extended) position to provide additional leverage.

To open the handle, pinch the Lever Release Buttons and pull up.

Lever Release Buttons



Press down the manual override button (atop the center) and turn the handle to manually open or close the actuated valve assembly.

Manual Override Button

To reengage the drive train, release the override button and turn the handle until the manual override button 'clicks' signaling the re-engagement of the drive train. The manual override lever handle can then be closed.

Product Specifications

Ball Valves

TEMPERATURE*: -50˚F to 450˚F

VALVE BODY PRESSURE RATING*: 720 P.S.I**. C.W.P.***

MAXIMUM PRESSURE DIFFERENTIAL: 400 P.S.I.**

*see Differential Pressure - Temperature Chart
**p.s.i = Pounds Per Square Inch
***C.W.P. = Cold Working Pressure to 150˚F

VACUUM: 20 Micron

SATURATED STEAM: 150 p.s.i.

CONNECTION - STYLE:
Pipe / N.P.T.F. (Dryseal National Pipe Taper)
Others including B.S.P.T. (British Standard Pipe Taper) may be available upon request

BODY DESIGN / SIZE RANGE:

One Piece Body - Model 76 Reduced Port	1/2" - 2"
Two Piece Body - Model 86 Standard Port	1/4" - 2"
Two Piece Body - Model 96 Full Port	1/2" - 1-1/2"

MATERIALS:

BODY;
- Brass - ASTM B-16
- Carbon Steel - ASTM A108,
- 316 Stainless Steel ASTM A276,
- Alloy 20 - ASTM - B473
- Monel - ASTM B164-75

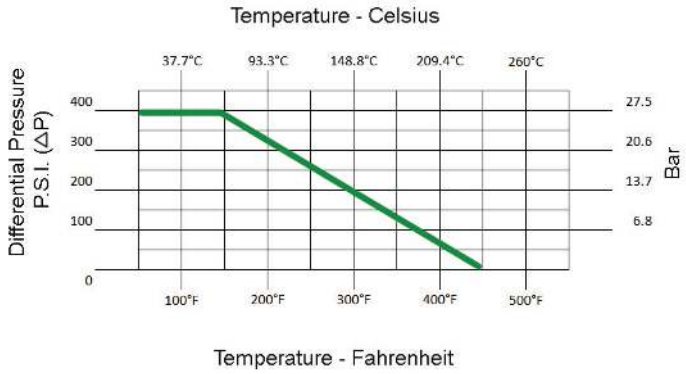
BALL AND STEM; 316 Stainless Steel - ASTM A276
(except Alloy 20 & Monel - then same as body material)
SEATS AND STEM SEAL; Glass Reinforced P.T.F.E. (Teflon ®)

Cv

Note: The values derived from the flow equation are for estimating purposes only. Product variances or systemic factors may alter actual performance.

Approximate Cv Values			
Valve Size (inches)	Single Piece Body Reduced Port	Two Piece Body Standard Port	Two Piece Body Full Port
1/4 & 3/8	-	5.5	8
1/2	5.5	8	12
3/4	10	12	32
1	15.5	32	46
1-1/4	20	46	82
1-1/2	37	82	120
2	60	120	-

DIFFERENTIAL PRESSURE - TEMPERATURE CHART



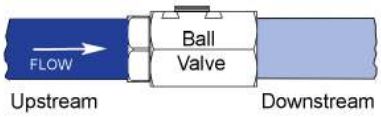
P.T.F.E. Glass Filled Reinforced Teflon®

To Use the Pressure - Temperature Chart

Draw an imaginary line from your media Differential Pressure to your media Temperature to confirm it falls within the valve rating based upon the type of seal materials to be used.

To Calculate Pressure Differential

Compare the Upstream media pressure to the Downstream. The pressure differential should not exceed 400 P.S.I. See examples below;



Examples:

Upstream Pressure of 700 P.S.I. less Downstream of 325 P.S.I. equals 375 P.S.I. which is below 400 P.S.I. differential i.e. OK

Upstream Pressure of 600 P.S.I. Less Downstream of 0 P.S.I. equals 600 P.S.I. which is above 400 P.S.I. differential - outside of ratings not recommended.

Product Specifications

Pneumatic Actuators

TEMPERATURE: -20˚ F to 350˚ F

CYCLE (INDEX) TIME: Approximately 1/2-1 Second (Load Dependent)

AIR SUPPLY: 60 - 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 close 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. All actuator models are permanently lubricated and are not recommended to be used with any other air supply lubricants.

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.

AIR CONNECTIONS: Female 1/8" NPT / NAMUR Interface

MATERIALS:

BODY - Aluminum with Teflon ® Impregnated Hard Anodized (PolyLube®) Surfaces
EXTERNAL HARDWARE - (Pinion Shaft, Driver, End Caps) 300 Series Stainless Steel
SPRING MODULES - Aluminum with Teflon® Impregnated Hard Anodized (PolyLube®) Surfaces, 300 Stainless Hardware
EXTERNAL TRIM - 300 Series Stainless Steel

Pneumatic Actuator Accessory - Integral Solenoid Valves

TEMPERATURE: -20˚ F to 350˚ F

AIR SUPPLY / TUBING: see Pneumatic Actuators Specifications

AIR CONNECTION: Female 1/4" NPT

OPERATING COIL: Operating coil technical data is dependent on the specific model selected, however, all standard coils as designated by the 'SC' code and conform to the following:

Wattage: 5 Watts
Class: F, continuous duty
Protection: IP65 (with connector) dusttight, water resistant, Connection: Mini-DIN Standard

MATERIALS:
BODY - PTFE / Anodized Aluminum
SPOOL - 18-8 Stainless Steel
SEALS - Nitrile / Viton®
HARDWARE - 18-8 Stainless Steel
COIL / BODY - GF Nylon / GF Zytel

Product Specifications

Pneumatic Actuator Accessory - Limit Switch

TEMPERATURE: 10˚ F to 180˚ F

CONDUIT CONNECTION: 1/2" NPT

ELECTRICAL RATING: 10 amp. 250VAC maximum; 1/2 amp. 125VDC; 1/4 amp. 250VDC; 5 amp. 125VAC lamp load. Note: each pole must be the same polarity to utilize these ratings.

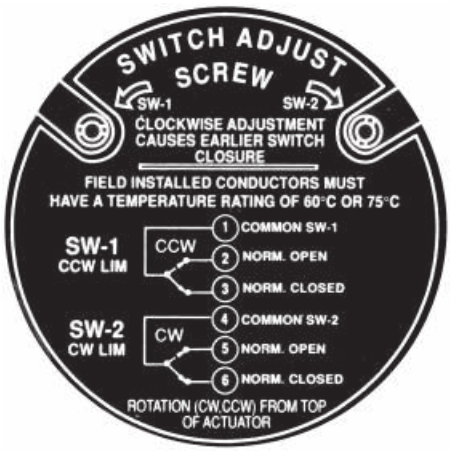
MICROSWITCHES: Mechanical S.P.D.T. (Single Pole Double Throw)

INTERNAL WIRING CONNECTORS: Screw Clamp

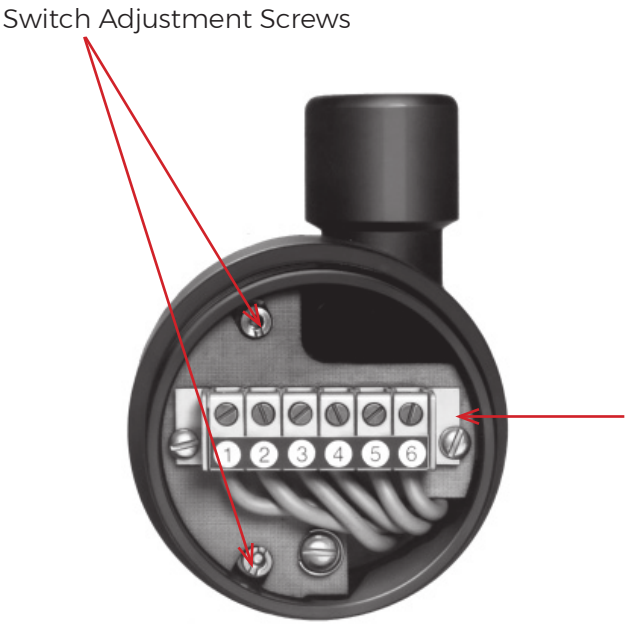
NEMA STANDARDS: NEMA 1 (General Purpose); NEMA 4 (Watertight & Dusttight); NEMA 7 (Hazardous Locations, Class I Groups B, C, & D); NEMA 9 (Hazardous Locations, Class II, Groups E, F, & G); NEMA 12 (Oiltight and Driptight); and NEMA 13 (Oiltight and Dusttight).

UL® LISTINGS: Industrial Control Equipment for use in Hazardous Locations, Class I, Groups B,C, & D and Class II, Groups E, F, & G

MATERIALS:
Body / Cover - Aluminum with Teflon® Impregnated Hard Anodized (PolyLube®) Surfaces
Probes - 316 Stainless Steel
Cover Seal / Probes - Buna N



Electrical Schematic
(located in cover)



Product Specifications

Electric Actuators

TEMPERATURE: 40˚ F to 150˚ F

MOTOR: Reversing, Brushless, Capacitor-Run with Auto-Reset Thermal Overload Protection.

GEAR TRAIN: Permanently Lubricated, Maintenance Free

POWER: 120VAC 50/60 Hz Single Phase, 12&24VDC

OVERRIDE: Manual - Fold Out Lever Handle

PORTS: (2) 1/2" N.P.T. Conduit

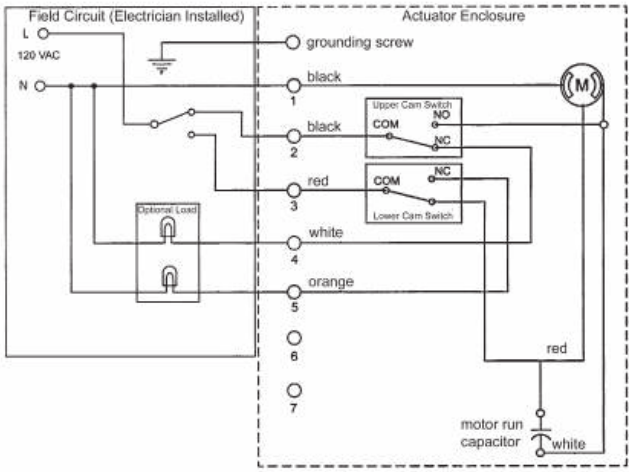
CYCLE (INDEX) TIME: 6 Seconds

DUTY CYCLE /AMPS:

Model	DUTY CYCLE:	AMPS: (Full Load)
615-120AC	78%	0.5
630-120AC	78%	0.5
615-12VDC	100%	1.0
630-12VDC	75%	1.0
615-24VDC	100%	0.5
630-24VDC	75%	0.5

MATERIALS:
Enclosure - Dupont® FR50 Cover, Teflon® Coated Cast Aluminum Base
Shaft - 18-8 Stainless Steel
External Trim - 300 Series Stainless Steel

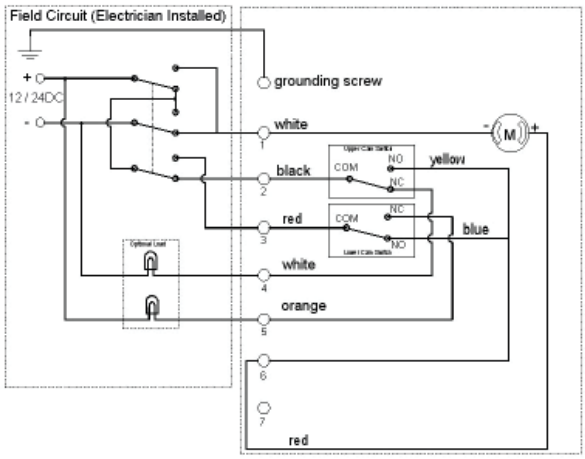
120 AC Wiring Schematic



Neutral (N) to Terminal 1 and Line (L) to Terminal 2 Ball Valve / Actuator will Open. Neutral (N) to Terminal 1 and Line (L) to Terminal 3 Ball Valve / Actuator will Close.

Terminals 4 & 5 can be used for position feedback using motor voltage.

12 & 24 DC Wiring Schematic

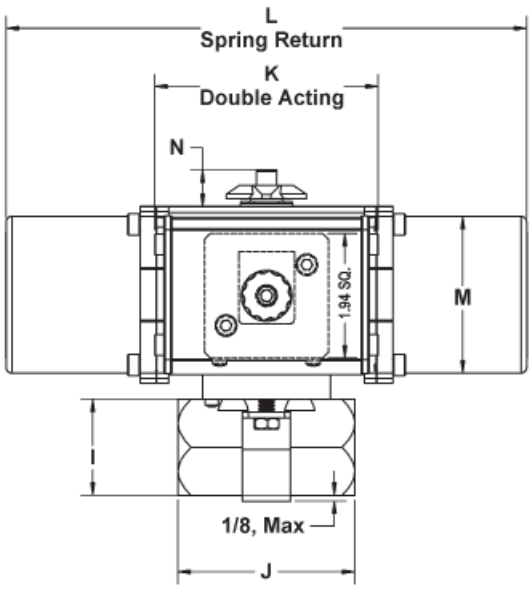


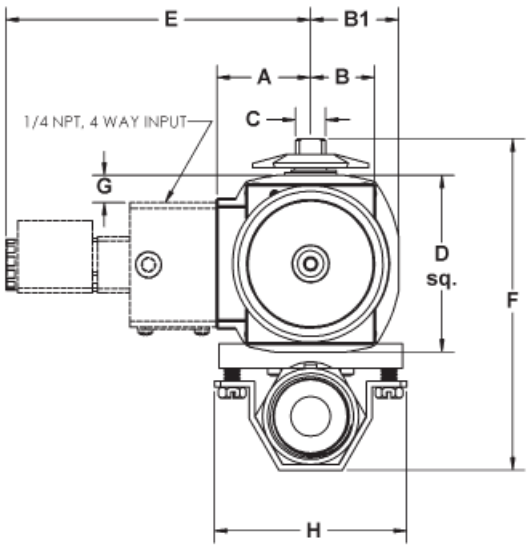
Negative (-) to Terminal 1 and Positive (+) to Terminal 2 Ball Valve / Actuator will Open. Positive (+) to Terminal 1 and Negative (-) to Terminal 3 Ball Valve / Actuator will Close.

Terminals 4 & 5 can be used for position feedback using motor voltage.

Product Dimensions

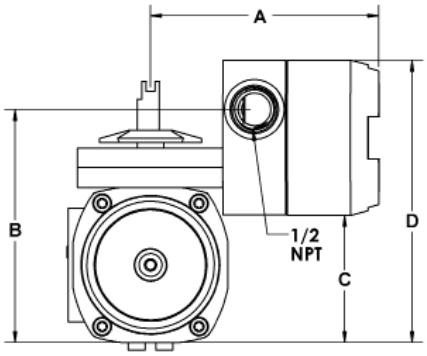
Pneumatically Actuated





Valve Construction / Model			Actuator Type Model		Approximate Dimensions, Inches														
Single Piece Body Reduced Port 76	Two Piece Body Standard Port 86	Two Piece Body Full Port 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				

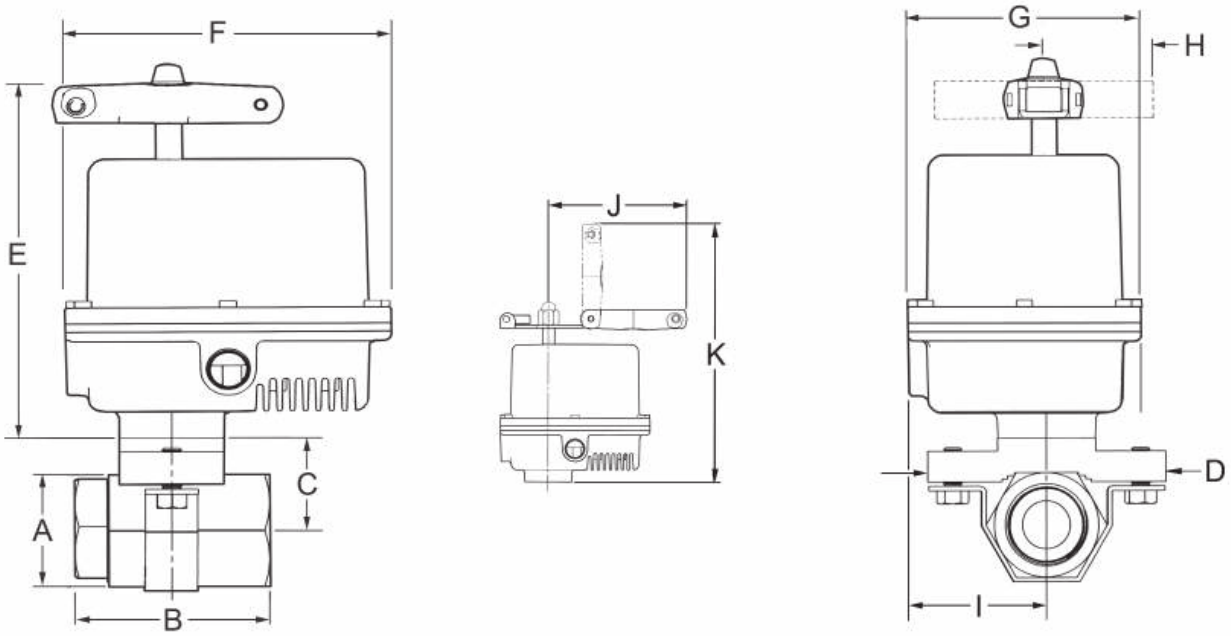
With Limit Switch Option



Actuator Model	A	B	C	D
A512D, A512SR	3.97	4.23	2.37	5.10
A522DS, A522SR	4.24	5.91	4.05	8.78

Product Dimensions

Electrically Actuated



Valve Construction / Model			Dimensions- Inches											
Single Piece Body Reduced Port 76	Two Piece Body Standard Port 86	Two Piece Body Full Port Two Piece	A	One Piece Body 76 B	Two Piece Body 86 / 96 B	C	D	E	F	G	H	I	J	K
1/2	1/4 & 3/8	-	1.00	2.18	2.18	1.15	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
3/4	1/2	-	1.18	2.22	2.61	1.24	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1	3/4	1/2	1.50	2.76	2.94	1.40	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1-1/4	1	3/4	1.94	3.02	3.32	1.62	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1-1/2	1-1/4	1	2.12	3.45	3.70	1.76	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85
2	1-1/2	1-1/4	2.62	4.04	4.25	2.02	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85
-	2	1-1/2	3.00	-	4.57	2.21	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85

How To Configure Model Number

Manually Actuated Valve

Select Valve Size and Product Attributes separated with dashes. Example 1 86-6-RT-6-L

	Product Attributes					
Size	**Model / Valve Type**	**Body Material**	**Seal Material**	**Ball & Stem Material**	**Optional Special Features**	**Operator Handle Type**
1/4	76 One-Piece Body Reduced Port 1/2" - 2"	1 Brass	RT Glass Filled Reinforced P.T.F.E. (Teflon®)	6 316 Stainless Steel	B Internal Pressure Equalizing Vent - Upstream Type	L Lever
3/8		4 Carbon Steel		16 Alloy 20	FC0* NSF® ANSI 169 Listed	SL Stainless Steel Lever
1/2	86 Two-Piece Body Standard Port 1/4" - 2"	6 316 Stainless Steel		19 Monel		LL Latching Lockable
3/4		16 Alloy 20 76 Model Only 1/2" - 1"				R Oval
1	96 Two-Piece Body Full Port 1/2" - 1-1/2"					W Wing
1-1/4		19 Monel 76 Model Only 1/2" - 1"				Z Actuator Drive Key All Except Below
1-1/2						Z1 Actuator Drive Key for; 1-1/4" Model 76 1" Model 86 3/4" Model 96
2						

NOTES: Suffix M after Valve Model indicates current stem geometry. Applies to: 1/2" - 3/4" Model 76, 1/4" - 1/2" Model 86

* Certain Materials Available for NSF® Certification - Consult Gemini Valve

Pneumatically Actuated Valve

1. Take Manually Actuated Valve Model and omit Operator / Handle Type. Example 1 86-6-RT-6
2. Based upon the Valve Model & Size Select Actuator Type and add to Valve Size & Model separated by dashes. Example 1 86-6-RT-6-A512D
3. Optional Accessory: Take the Pneumatically Actuated Valve Model and add GP NAMUR Integral Solenoid Valve and or Limit Switch separated by dashes. Examples: 1 86-6-RT-6-A512D-4GP-SC07D-120VAC-DS
   1 86-6-RT-6-A512D-4GP-SC07D-120VAC-DS-LS-1
   1 86-6-RT-6-A512D-LS-1

					Optional Actuator Accessory						
Valve Model			Actuator Type		GP Model NAMUR Integral Solenoid Valve						Limit Switch
76	86	96	Double Acting	Spring Return	Type	Coil Style	Voltage Code	Connection Type	Voltage	Electrical Connector	
1/2	1/4 & 3/8	-	A512D	A512SR	4GP (use with Double-Acting)	SC Standard	07 120VAC	D Mini DIN	VAC	DS DIN X Strain	LS-1
3/4	1/2	-				MR Manual Override	03 24VDC	L* Wire Leads	VDC	DC DIN X Conduit; 1/2"	
1	3/4	1/2									
1-1/4	1	3/4									
1-1/2	1-1/4	1	A522D	A522SR	3GP (use with Spring-Return)	HL* Hazardous Locations	02 12VDC			DA DIN X Field Bus M12	
2	1-1/2	1-1/4					06 24VAC			DM15 DIN X Molded 15' Lead	
-	2	1-1/2					08 240VAC			C24* Conduit 24" Leads	

* HL Coil Style Only Offered in 120VAC Conduit Hub with 24" Leads

Electrically Actuated Valve

1. Take Manually Actuated Valve Model and omit Operator / Handle Type. Example 1 86-6-RT-6
2. Select the Actuator Model and Voltage and add to Valve Size and Model separated by dashes.
   Example: 1 86-6-RT-6-615-120AC

Valve Model			Actuator Model	Voltage	Optional - Extra Set of Limit Switches
76	86	96			
1/2	1/4 & 3/8	-	615	120AC	LS
3/4	1/2	-		24DC	
1	3/4	1/2		12DC	
1-1/4	1	3/4			
1-1/2	1-1/4	1	630		
2	1-1/2	1-1/4			
-	2	1-1/2			

Sample Request

OEMs (Original Equipment Manufacturers)

Gemini Valve provides no cost / obligation samples to OEMs who utilize our product(s) as in integral part of the products they manufacture. To obtain a product sample we simply want to learn the details of your intended application to ensure we are offering the best Gemini Valve solution for your specific application requirements. To obtain samples please call 603 244-7931 or email service@geminivalve.com your application parameters along with the model your interested in and we will respond promptly.

Plant Engineers, Maintenance Managers and Personnel

Gemini Valve provides samples at little or no cost to Plant Engineers, Maintenance Managers and Personnel who have ongoing or project requirements to enable testing and evaluation of our products. To obtain a product sample we simply want to learn the details of your intended application to ensure we are offering the best Gemini Valve solution for your specific application requirements. To obtain samples please call 603 244-7931 or email service@geminivalve.com your application parameters along with the model your interested in and we will respond promptly.

All specifications herein are subject to change without notice or obligation. Products are marketed per Gemini Valve Standard Terms & Conditions.

Seller warrants its products for a period of one (1) year, to be manufactured in accordance with our written specifications and free from material defects in material and/or workmanship. Seller, at its option, will promptly repair or replace any products returned intact to the factory, transportation charges prepaid, which Seller determines to be defective in material and/or workmanship. The foregoing shall constitute the sole remedy for any breach of Seller's warranty. Care must be taken to assure that the internal media and external environment are compatible with the materials of the ball valve. For a complete copy of our Warranty please see our Standard Terms and Conditions at www.geminivalve.com

Customer Satisfaction Promise - If for any reason our product(s) or service do not meet / exceed your expectations please contact us for prompt support.