

# User's Guide



BVE70



BVPS70



BVP70

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## **BVP70, BVPS70 & BVE70 Series Pneumatically & Electrically Actuated Tube Compression End Style Valves**



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**WARNING:** These products are not designed for use in, and should not be used for, human applications.

# BVP70, BVPS70 & BVE70 Series Ball Valves

## Ball Valve - MATERIALS OF CONSTRUCTION

**BODY:** Brass - ASTM B-16, or 316 Stainless Steel - ASTM A276

**BALL AND STEM:** 316 Stainless Steel

**SEATS AND STEM SEAL:** Glass Reinforced P.T.F.E.

## Ball Valve - CONNECTION / STYLE SIZES

Tube / Compression 1/4" - 1"

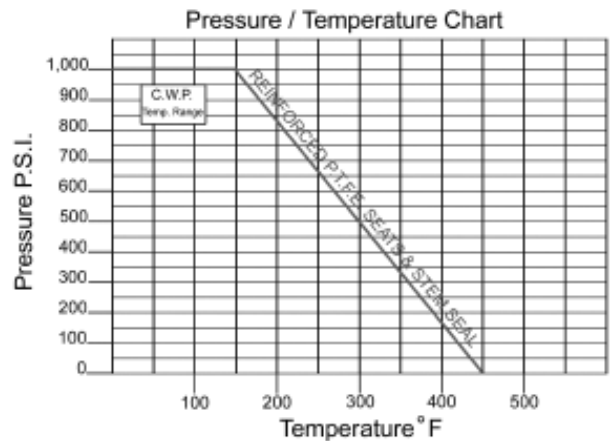
## Ball Valve - RATINGS

**TEMPERATURE:** -50 F to 450 F  
(also see Pressure Temperature Chart)

**PRESSURE:** 1000 p.s.i. C.W.P. (Cold Working Pressure to 150 F)  
(also see Pressure Temperature Chart)

**VACUUM:** 20 Micron

**SATURATED STEAM:** 150 p.s.i.



## Ball Valve - FLOW CHARACTERISTICS

The approximate flow rate through a valve can be calculated as follows:

$$Q = C_v \sqrt{\frac{\Delta P}{G}}$$

where;

- Q = flow rate in gallons (U.S. Std.) per minute
- C<sub>v</sub> = valve constant
- P = pressure drop across the valve in pounds per square inch
- G = specific gravity of the media of relative to water

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

Size	1/4	3/8	1/2	3/4	1
C <sub>v</sub>	*	*	5.5	8	12
* - N/A					

# BVP70 & BVPS70 Series Pneumatic Actuators

## BVP70 & BVPS70 Pneumatic Actuators - MATERIALS OF CONSTRUCTION

**BODY:** Aluminium with P.T.F.E. Impregnated Hard Anodized Surfaces

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

**SPRING MODULES:** Aluminium with P.T.F.E. Impregnated Hard Anodized Surfaces, 300 Stainless Hardware

**EXTERNAL TRIM:** 300 Series Stainless Steel

**PILOT VALVE**

**SPOOL:** 18-8 Stainless Steel

**SEALS:** Nitrile / FKM

**HARDWARE:** 18-8 Stainless Steel

**COIL / BODY:** GF Nylon / Polyimide 66

## BVP70 & BVPS70 Pneumatic Actuators - RATINGS / SPECIFICATIONS

**TEMPERATURE:** -20 F to 350 F

**AIR SUPPLY:** 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.

**DUTY CYCLE:** 100%

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

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

**AIR SUPPLY CONNECTION:** 1/8" NPT

**ELECTRICAL CONNECTION:** Mini-DIN by Wire Strain Relief

**ELECTRIC:** Standard 120VAC Coil:

Wattage: 5

Class: F Continuous Duty

Protection: IP65 (with connector) Dust-tight, Water Resistant

## BVP70 & BVPS70 Pneumatic Actuators- MAINTENANCE

Omega BVP70 & BVPS70 Series Pneumatic Actuators are designed to be maintenance free and normally are replaced vs. repaired.

# BVE70 Series Electric Actuators

## BVE70 Electric Actuator- MATERIALS OF CONSTRUCTION

**ENCLOSURE:** Nylon Resin Cover, P.T.F.E. Coated Cast Aluminum Base

**SHAFT:** 18-8 Stainless Steel

**EXTERNAL TRIM:** 300 Series Stainless Steel

## RATINGS / SPECIFICATIONS

**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

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

**CYCLE TIME:** 6 Seconds

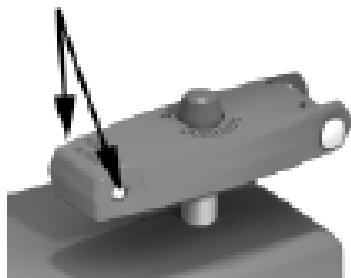
**DUTY CYCLE:** 100%

**OVERRIDE:** Manual - Fold Out Lever Handle

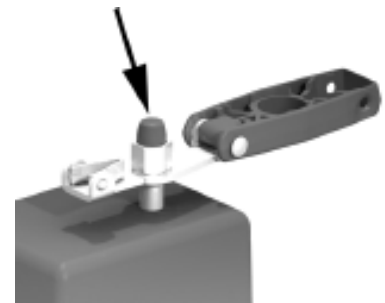
## MANUAL OVERRIDE OPERATION

The push-button manual override system allows the user to easily disengage the electric drive gear train for manual operation of the actuator. 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. Press down the manual override button (atop the center) and turn the handle to manually open or close the actuated valve assembly. 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.

Lever Release Buttons



Manual Override Button



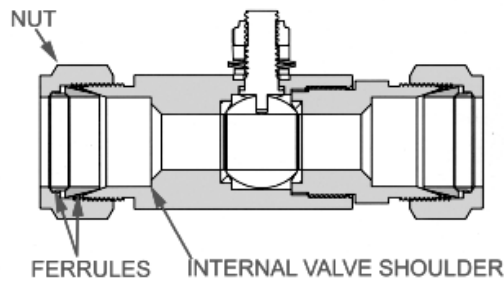
# BVP70, BVPS70 & BVE70 Series Installation Instructions

## Ball Valve - INSTALLATION INSTRUCTIONS

Tube (initial assembly):

1. Ensure the tube end is square and free from burrs, nicks, scratches and debris.
2. Loosen the NUT by turning it counter-clockwise one turn. Insert the tube through the NUT and FERRULES until it sits against the internal VALVE SHOULDER. Tighten the NUT (clock-wise) hand tight. Continue tightening the NUT with a wrench for 1 to 1-1/4 turns or until snug.

Note: for re-assembly, after initial assembly, approximately 1/4 turn with wrench is generally required to re-tighten.



## Pneumatic Actuator - INSTALLATION INSTRUCTIONS

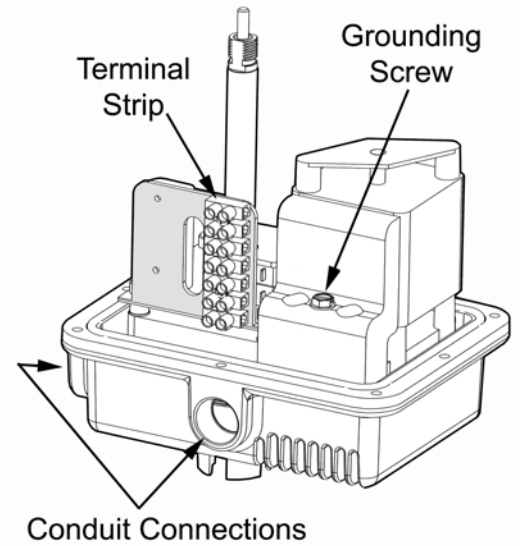
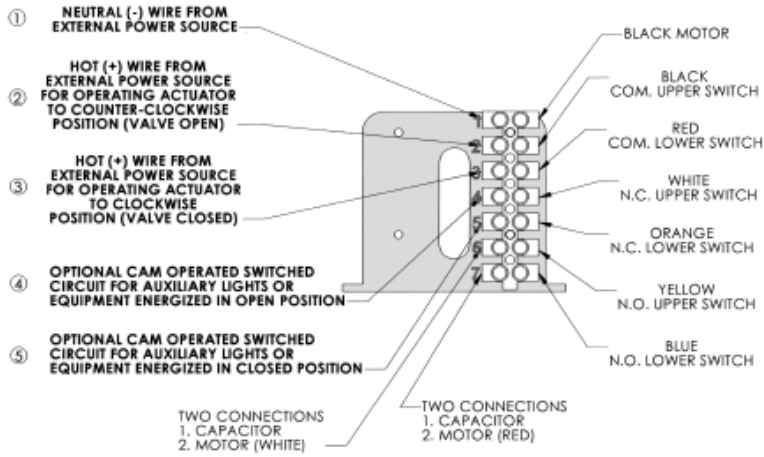
1. Attached air supply to 1/8" NPT air inlet on integral pilot / solenoid valve.
2. The coil is equipped with a DIN x Strain electrical connector. To wire the connector, remove the center mounting screw and, with a small screwdriver, pry the inner element from the body of the connector to expose the terminal blocks inside. Route the wire through the hub of the connector. Loosen the sealing nut and ensure the wire insulation passes through the rubber grommet inside the hub. Affix the wires to the appropriate terminal block. Retighten sealing nut to secure the wire and provide a seal.

## Electric Actuator - INSTALLATION INSTRUCTIONS

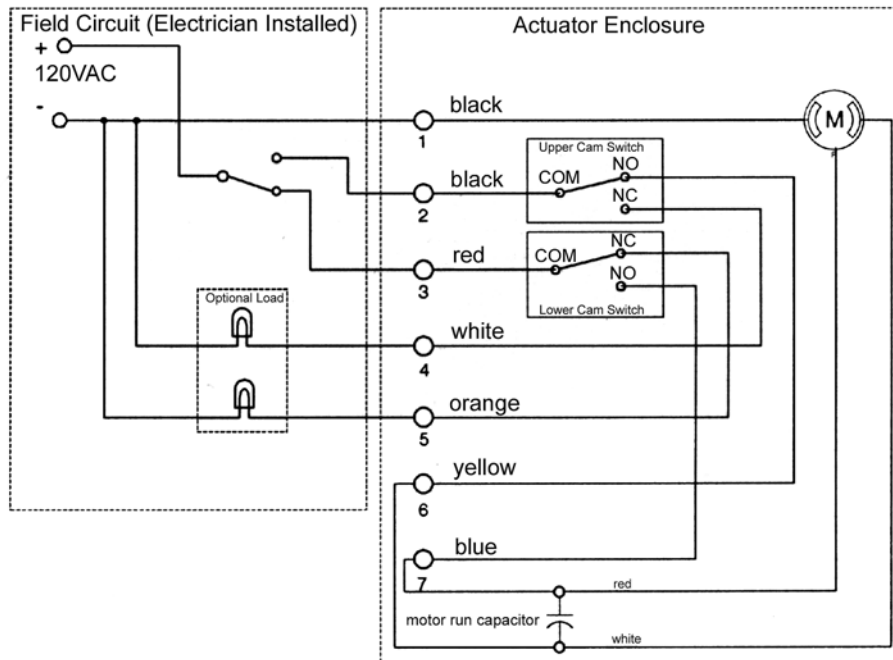
1. Unlatch and open the override handle to access the handle nut. Remove nut with 3/4" wrench.
2. Remove eight (8) socket head screws with 4mm hex wrench. Remove cover by pulling straight up.
3. Route the wire to be terminated through conduit hub and up through the access space to the terminal block. Strip insulation back 1/4", insert the stripped ends directly into the proper terminal clamps and tighten screws. All internal connections are labeled in the diagram, see Page 7.
4. Attach grounding wire to green screw that is located on top of conduction bar.
5. Verify that cover o-ring is properly seated in groove. Replace cover and screws.

# BVP70, BVPS70 & BVE70 Series Installation Instructions

## Electric Actuator - INSTALLATION INSTRUCTIONS (continued)



## 120AC Wiring Schematic



Note: Valve in Closed Position (handle perpendicular with piping)

# BVP70, BVPS70 & BVE70 Series Maintenance Instructions & Dimensions

## Ball Valve - MAINTENANCE

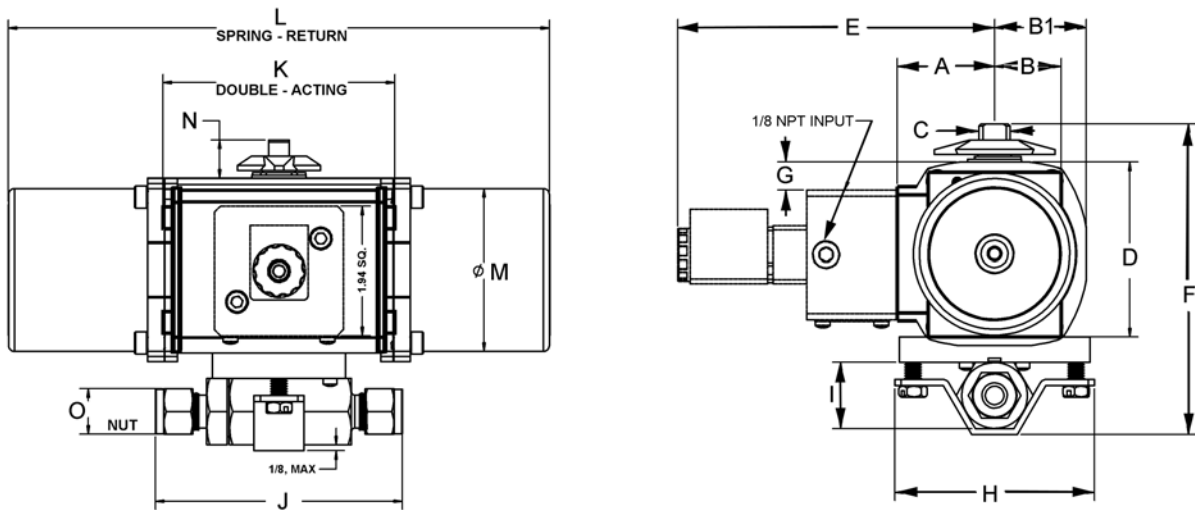
The BVP70, BVPS70 & BVE70 Series utilizes our self compensating stem seal design. This design automatically compensates for wear as well as thermal expansion and contraction resulting in a leak tight, maintenance free, service life.

Once the stem seal has worn beyond the compensation afforded by the Belleville springs adjustment of the stem nut may enable valve to be returned to service. Holding the 'flats' of the stem, tighten the stem nut until Belleville springs become fully compressed (flattened); the torque required to tighten the nut further increases sharply when this point is reached. Do not tighten the stem nut beyond this point to avoid damage of the stem seal.

## Actuator - MAINTENANCE

The BVP70, BVPS70 & BVE70 Series actuators are maintenance free.

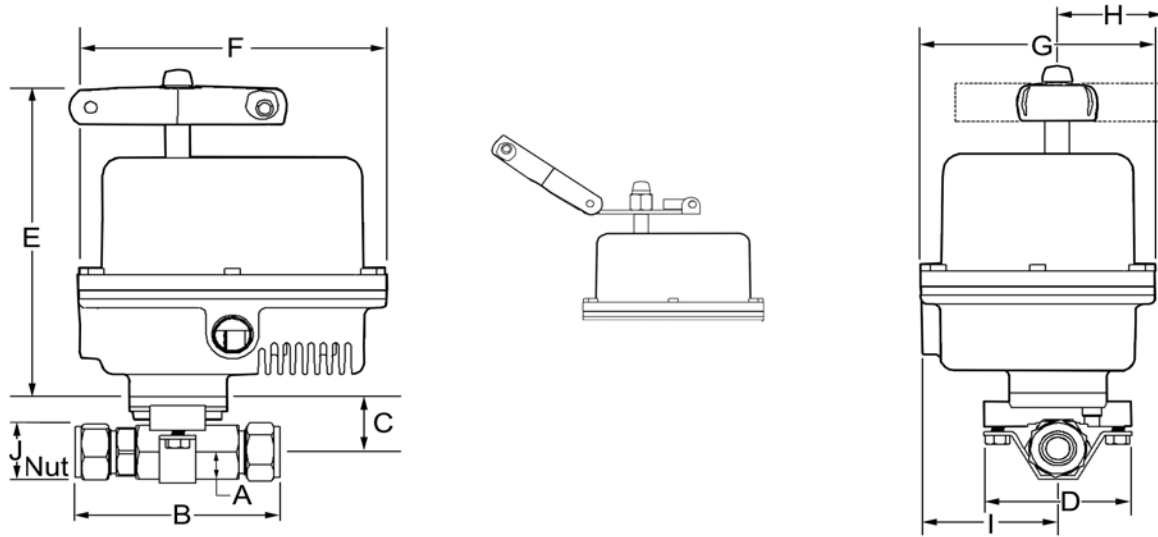
## BVP70 & BVPS70 Series Dimensions



BVPS Spring Return - 'SR' BVP Double Acting - 'D'																			
Approximate Dimensions - Inches																			
Tube Size	'SR'	'D'	'SR'	'D'		'SR'	'D'		'SR'	'D'	'SR'	'D'							
	A	B	B1	C	D	E	F	G	H	I	J	K	L	M	N	O			
1/4	1.46						4.66	4.51			1.00	3.72					9/16		
3/8							4.66	4.51			1.00	3.70					11/16		
1/2		1.17	1.00	1.37	1.53	.31	2.75	3.06	4.76	.42	.27	3.00	1.00	3.94	3.48	8.13	2.44	.57	7/8
3/4							4.85	4.70					1.19	4.17					1-1/8
1							5.16	5.01					1.50	4.92					1-1/2



# BVE70 Series Dimensions



Tube Size	Approximate Dimensions - Inches									
	A	B	C	D	E	F	G	H	I	J
1/4	.50	3.72	1.15	3.00	6.74	6.25	4.75	2.23	2.78	9/16
3/8	.50	3.70	1.15							11/16
1/2	.50	3.94	1.15							7/8
3/4	.59	4.17	1.24							1-1/8
1	.75	4.92	1.40							1-1/2

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If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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