

User's Guide



BVE80



BVPS80



BVP80

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BVP80, BVPS80 & BVE80 Series Pneumatically & Electrically Actuated Barstock Ball Valves



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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

BVP80, BVPS80 & BVE80 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. (Teflon®)

Ball Valve - CONNECTION / STYLE SIZES

Pipe / N.P.T.F. 1/4" - 2"
(Dryseal National Pipe Taper)

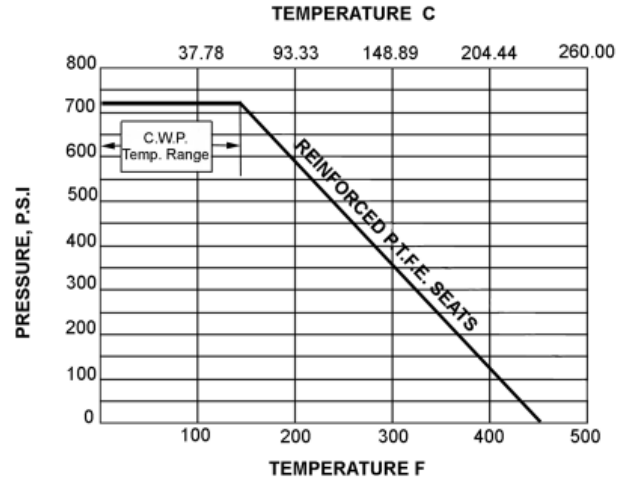
Ball Valve - RATINGS

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

PRESSURE: 720 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_v = 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	1-1/4	1-1/2	2
C _v	5.5	5.5	8	12	32	46	82	120

BVP80 & BVPS80 Series Pneumatic Actuators

BVP80 & BVPS80 Pneumatic Actuators - MATERIALS OF CONSTRUCTION

BODY: Aluminium with Teflon® Impregnated Hard Anodized (PolyLube®) Surfaces

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

SPRING MODULES: Zytel® Housing, 300 Series Stainless Hardware

EXTERNAL TRIM: 300 Series Stainless Steel

PILOT VALVE

SPOOL: 18-8 Stainless Steel

HARDWARE: 18-8 Stainless Steel

SEALS: Nitrile / Viton®

COIL / BODY: GF Nylon / GF Zytel®

BVP80 & BVPS80 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

BVP80 & BVPS80 Pneumatic Actuators- MAINTENANCE

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

BVE80 Series Electric Actuators

BVE80 Electric Actuator- MATERIALS OF CONSTRUCTION

ENCLOSURE: Dupont® FR50 Cover, Teflon® 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

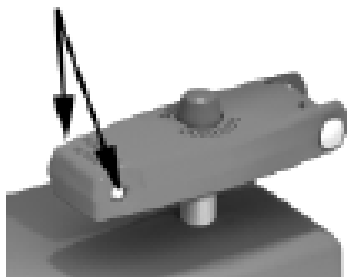
DUTY CYCLE: 1/4" - 1" Sizes; 100% 1-1/4" - 2" Sizes; 75%

OVERRIDE: Manual - Fold Out Lever Handle

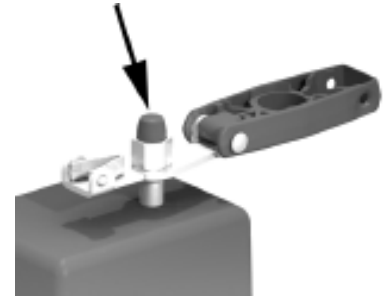
MANUAL OVERRIDE OPERATION

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



BVP80, BVPS80 & BVE80 Series Installation Instructions

Ball Valve - INSTALLATION INSTRUCTIONS

The following serves as a guideline for those experienced in pipe joint makeup. Otherwise, services of a certified pipe fitter should be utilized for installation.

1. Ensure that both the male pipe and female valve threads are free from dirt, debris and corrosion. Wire brushing of the male pipe threads is recommended to ensure a good metal-to-metal joint.
2. Apply a good quality thread lubricant (pipe dope) on the male threads. Lubricant reduces friction when pulling up the pipe joint. Note, thread lubricant is not intended to seal the joint and will not compensate for poor quality male pipe or fitting threads.
3. Turn the female valve threads onto the male pipe threads by hand. Upon free engagement of the threads, continue to turn the valve as far up as it will go (by hand). With the use of a wrench continue to tighten the valve onto the pipe. The pipe joint seal should occur within 1 to 3 turns after wrenching begins. Care should be taken not to exceed 3 turns in which damage to the threads can occur.
4. The pipe joint should be tested for leakage to ensure the pipe joint has been achieved.

Pneumatic Actuator - INSTALLATION INSTRUCTIONS

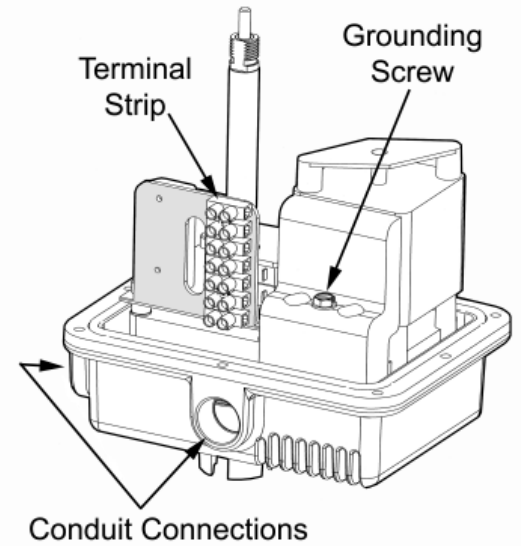
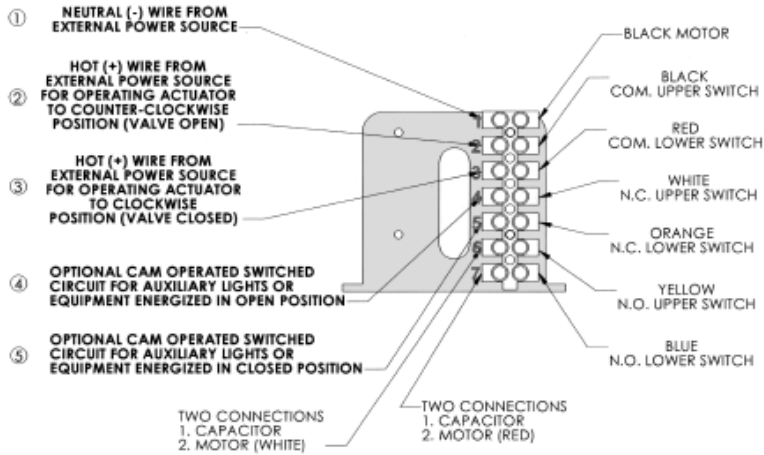
1. Attached air supply to 1/8" NPT air inlet on integral pilot / solenoid valve.
2. The coil is equipped with a DIN x Strain electrical connector. To wire the connector, remove the center mounting screw and, with a small screwdriver, pry the inner element from the body of the connector to expose the 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

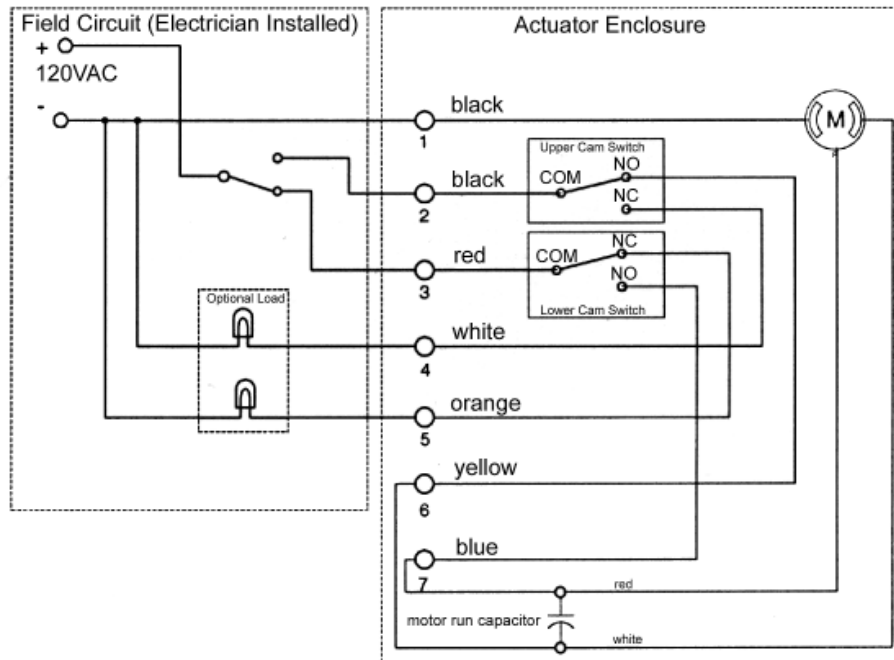
1. Unlatch and open the override handle to access the handle nut. Remove nut with 3/4" wrench.
2. Remove eight (8) socket head screws with 4mm hex wrench. Remove cover by pulling straight up.
3. Route the wire to be terminated through conduit hub and up through the access space to the terminal block. 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)

BVP80, BVPS80 & BVE80 Series Maintenance Instructions & Dimensions

Ball Valve - MAINTENANCE

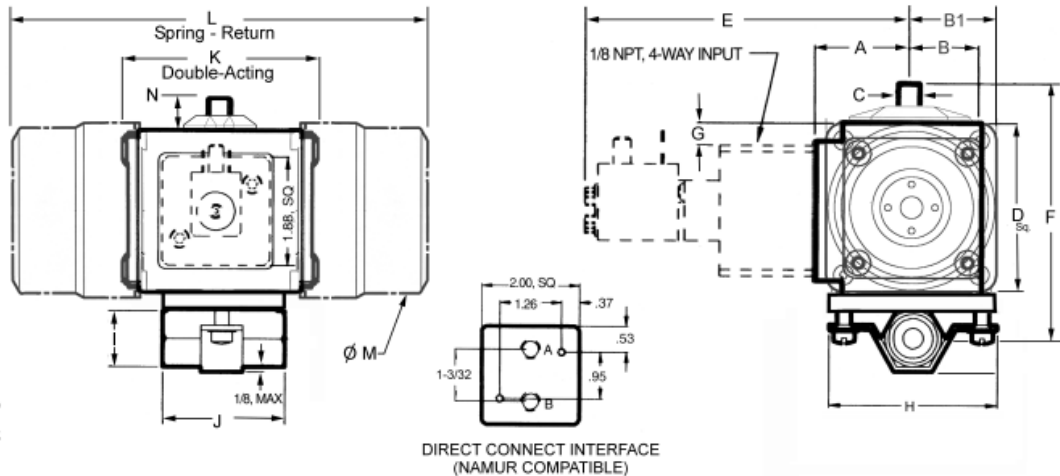
The BVP80, BVPS80 & BVE80 Series utilizes our self compensating stem seal design. This design automatically compensates for wear as well as thermal expansion and contraction resulting in a leak tight, maintenance free, service life.

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

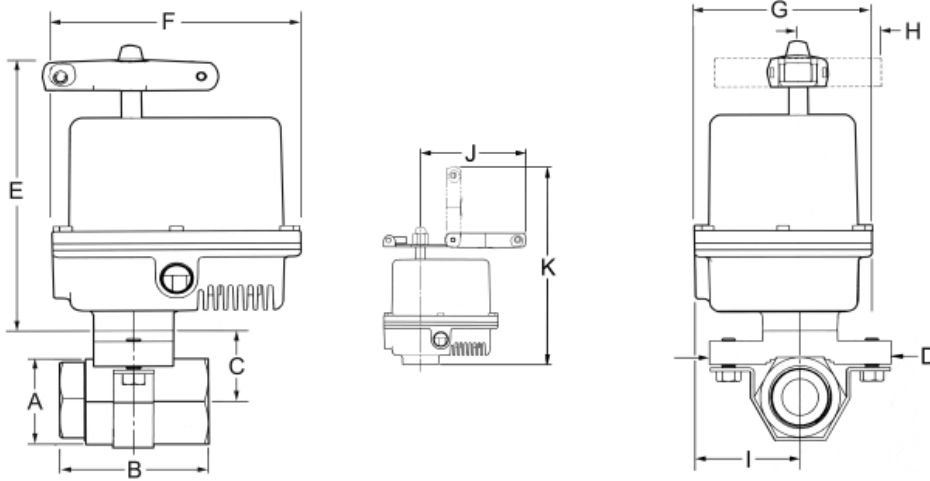
The BVP80, BVPS80 & BVE80 Series actuators are maintenance free.

BVP80 & BVPS80 Series Dimensions



Valve Size	Actuator Type - Model		Approximate Dimensions, Inches															
			A	B	B1	C	D	E	F	G	H	I	J		K	L	M	N
													76	86/96				
1/4 & 3/8	Spring Return BVPS	Double Acting BVP	1.36	1.00	1.53	.31	3.06	4.67	.32	3.00	1.00	2.18	2.22	3.62	8.31	2.81	.57	3.88
1/2																		4.06
3/4																		4.38
1																		6.44
1-1/4																		7.59
1-1/2																		8.09
2																		8.47

BVE80 Series Dimensions



Dimensions - Inches											
Valve Size	A	B	C	D	E	F	G	H	I	J	K
1/4 & 3/8	1.00	2.22	1.15	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1/2	1.18	2.61	1.24	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
3/4	1.50	2.94	1.40	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1	1.94	3.32	1.62	3.00	6.74	6.25	4.75	2.23	2.78	5.77	10.35
1-1/4	2.12	3.70	1.76	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85
1-1/2	2.62	4.25	2.02	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85
2	3.00	4.57	2.21	4.80	7.24	6.25	4.75	2.23	2.78	5.77	10.85



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

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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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

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.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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