ACTUATED BALL VALVES

INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS

BONOMI INDUSTRIES S.R.L
an ISO 9001 Company

Approved by LRQA CERTIFIED ISO 9001 - ISO 14001 ISO 45001

IMO069.01

IMPORTANT: read entire document carefully before installation or servicing and save it for future reference.

Caution! *Before servicing an installed valve or actuator be sure that all air, plumbing, and electric connections are broken and pressure relieved. Ball valves containing gases can trap pressure in the ball cavity, and retain it there for years, even after they are removed from the line. Valves should be "popped" by cycling the ball to relieve any such gas pressure in a safe direction. When assembling the actuator to the valve, be sure that the indicator on top of the actuator correctly shows the valve position. Failure to assemble this product to indicate the correct valve position could result in personal injury.*

VALVES

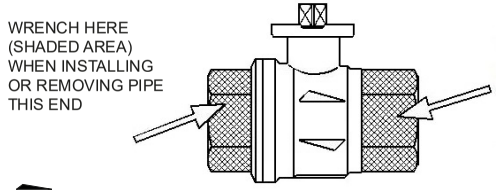
INSTALLATION: Most ***RuB*** valves may be installed for flow in either direction; in case of special, uni-directional valves, flow direction is shown by an arrow. Use standard piping practices when installing valves with threaded ends. Make sure pipes are properly aligned before valve is installed. When tightening the valve-to-pipe joint the valve should be wrenched from the flats at the end being worked (holding the opposite end of the valve will put the valve body in torsion and, for two piece bodies, may damage the body/cap joint). ***RuB*** recommends thread sealant rather than Teflon® tape, but if tape is used it should be used sparingly. Avoid over-torque, which may damage the valve. After installation the whole system should be flushed to avoid damage from solids left in the pipe.
It is highly recommended that the whole installation is tested before being released for use.
CAUTION: When installing a side drain or an exhaust ball valve, be sure to arrange proper handling of discharged fluid in order to avoid injury or property damage. All packaging materials and, when replaced, the valve itself, must be disposed of in compliance with local regulations.

WARNING For your safety, it is important to take the following precautions prior the removal of the valve from the line or before any disassembly:
1. Wear any protective clothing/equipment normally required when working with the fluid involved.
2. Depressurize the line and cycle the valve as follows:
2.a) Place the valve in the open position and drain the line;
2.b) Cycle the valve to relieve residual pressure in the body cavity before removal from the line;
2.c) After removal and before any disassembly, cycle the valve again, leave it in the half-open position, and collect any residual liquid for suitable disposal.
3. When removing piping from the valve, place a wrench on the body or the body-cap nearest the end being worked. Wrenching the valve from the opposite end may cause unintentional disassembly of the body-cap joint.

MAINTENANCE Periodically observe the valve to assure proper performance. More frequent observations are recommended under extreme operating conditions. Valves have O-ring stem sealing that do not require maintenance. For hard water operate valve every month. For very hard water operate valve every 2 weeks.

OPERATING INSTRUCTIONS To close the valve: rotate stem 90°; to open it: rotate stem 90°. Quick actuation may cause water hammer and consequent damage to the system. NOTE: stem slots show the position of the ball (when slots are parallel to pipe, valve is open, when perpendicular, it is closed). ***RuB*** valves can be used for throttling (i.e. operated in partially open position) but in severe throttling service the valve may be damaged. Consult with **BONOMI** INDUSTRIES for such applications. If you need any further information on applications, special configurations, approvals, matching valves with actuators, etc. please consult with **BONOMI** INDUSTRIES official catalogue, contact **BONOMI** INDUSTRIES, or visit our Web site (details on reverse).

NOTE: DRAWING SHOWS A TYPICAL TWO-PIECE BALL VALVE FOR ACTUATION WITH THREADED ENDS



Markings on valve (wherever applicable)

= ***RuB*** registered logo
CWXXXX = Body and end cap material:
617N brass EN 12165
510L lead-free brass "LF" EN 12165
511L lead-free and dezincification resistant brass "CR LF" EN 12165
625N anti-dezincification brass EN 12165
CR = Body and end cap material: dezincification resistant brass EN 12165 CW602N
PNXX = Max Cold Working Pressure in bar
XXX CWP = Max Cold Working Pressure in psi
XXX WSP = Max Working Steam Pressure in psi

EA Pneumatic Actuators

LUBRICATION EA actuators are lubricated at the factory, but for high cycle applications it is recommended that filtered and lubricated air be used. With properly dry air, parafin-base lubricants such as Mobil DT Light, or Pennzoil Quaker State Air Line Oil 32 or similar should be used.

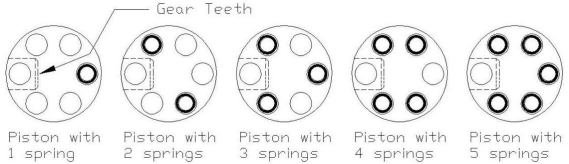
MANUAL OVERRIDE If air pressure is removed, double acting actuators can be operated manually by removing the indicator puck and turning the actuator shaft with a wrench. Spring return actuators can be operated in the same way, but they will not stay in the springs-compressed position unless held.

MOUNTING ACTUATORS ON BALL VALVES

1. Place valve in the full closed position. In that position the milled slot on the top of the valve stem will be perpendicular to the valve waterway.
2. Turn the actuator shaft full CW (smaller actuators can be turned by hand, using the indicator puck, larger ones can be turned with a wrench, after the puck is removed, or can be turned by gentle application of air pressure to the right-hand air port). If the actuator has springs set for "springs-to-close" they will turn the actuator to the full CW position automatically.
3. Mount the actuator on the valve mounting pad. It can be oriented parallel to the pipe or crosswise (see visual Indicator below).
4. Adjust stop screws (see instructions below).

STOP SCREW ADJUSTMENT Size 1 EA actuators (EA2-1 or EA4-1) have no adjustment, but for sizes 2 and larger the piston outward travel can be limited by adjusting the large adjusting screw on one end of the actuator. In the most common configuration this controls the ball valve full open position. Loosen the adjustment locknut, hold the actuator in the full CCW position, and screw the adjusting screw in or out to get perfect alignment of the ball port in the ball valve. Then retighten the lock nut.

INSTALLING RETURN SPRINGS: SPRING-TO-CLOSE FUNCTION All EA actuators (except size -1) have a return spring option. The actuator can be ordered with springs already installed, or springs can be ordered and installed in the field after the valve is mounted in a pipeline. To choose the correct number of springs please refer to the EA section of the ***RuB*** catalog. If an odd number of springs are required, divide the springs as evenly as possible between the left and right ends of the actuator (example: if 9 springs are required, use 4 on one end and 5 on the other, not 3 and 6). To install springs, set the travel stops first, and then remove the end caps, keeping them identified left and right. Place springs in the pockets in each piston. If less than the maximum number of springs (6) are to be used on either piston, the preferred spring installations are as shown below. Then reinstall the caps in their former locations to preserve the previous stop settings. Be sure the cap seals are properly seated.



INSTALLING RETURN SPRINGS: SPRING-TO-OPEN FUNCTION

This can be done in either of two ways.

1. The easiest method is to deliberately mis-index the actuator and valve stem by 90°. This will produce the desired spring-to-open function, but it will also reverse the customary direction of rotation, making the valve open with CW rotation of the stem (by world-recognized convention, valves turn CW to close, see also **VISUAL POSITION INDICATOR** below).

NOTICE: if strict compliance with the above convention is required, a second method can be employed as follows:

2. Remove the end caps and slide the pistons out of the cylinder (this can be done by turning the actuator shaft CCW, or by gently applying air to the left-hand air port). Turn each piston 180° on its own axis, so its rack moves to the opposite side of the shaft. Reinstall the pistons, taking care that the piston gear teeth, and the pinion gear teeth are "in time". Check the timing by pushing the pistons all the way into the cylinder. If both pistons travel to the full stroke position, and the flats on the top of the shaft are exactly parallel to the actuator bore, the parts are correctly timed. If the parts are not in time you must rotate the shaft to slide the pistons out again until the teeth disengage. Slip the teeth past each other until the correct timing is achieved. Then install the springs and end caps, and adjust the stop screws as described above (see also **VISUAL POSITION INDICATOR** below).

VISUAL POSITION INDICATOR

The yellow stripe on the position indicator puck (on top of the actuator shaft) gives a visual indication of valve position. The pucks are assembled in the factory to conform to the most common installations. But if the actuator is mounted differently (for example if the actuator has been mounted crosswise to the valve, or if it has been mis-indexed as in 1. above) the puck must be removed and turned 90° to give correct indication.

NOTE This product has been inspected according to **BONOMI** INDUSTRIES quality procedures.
If you ascertain that this valve contains a defect in material and/or workmanship, please return it to **BONOMI** INDUSTRIES with a copy of the original box label and the details of your claim. Claims must be made in writing and submitted within 8 days from delivery. In case of improper application or installation, no warranty is made.

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