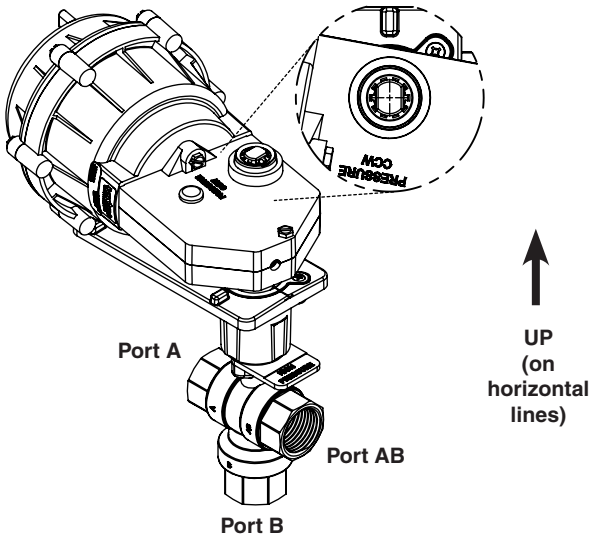
Installation Guide

Mounting

1. Clean the lines upstream from the valve. Remove any debris (welding slag, pipe scale, or other contaminants) larger than 1/16 inch (1.6 mm).

NOTE: If the system experiences large amounts of debris, steps should be taken to keep the system clean, such as 20 mesh strainer installed upstream of the valve.

2. Align the valve's flow indicator with the system (mixing or diverting—see below) flow.
3. The valve may be mounted on either vertical or horizontal pipe lines. On horizontal lines, mount the valve so the actuator is positioned upright and over the valve. (Leave sufficient room on all sides to service the actuator and valve.)



⚠ CAUTION

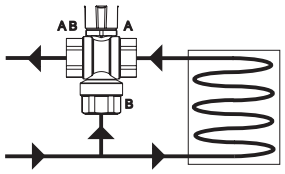
To prevent condensation from dripping onto the actuator housing on horizontal lines, mount the valve with the actuator in the upright position or, at most, at a 45° angle.

4. Seal valves with approved pipe sealant.
5. Using two wrenches, secure the valve to the pipe. Secure one wrench on the hex pads nearest the joint being tightened while using the second wrench to screw in the threaded end, thereby preventing the retainer-to-body seal from being broken. Torque should not exceed 75 ft-lbs. (102 N•m).
6. Eliminate air from the system to keep the valves full of fluid during operation.
7. After the mechanical installation and pneumatic connection (see the Connections section) have been completed, cycle the actuator to verify the direction of rotation for normal operation.

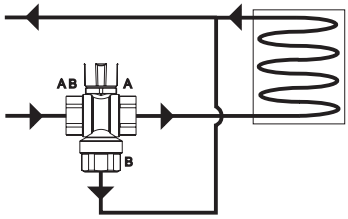
⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

Mixing Flow Action:
Full CCW (w/ air) = Port A to AB
Full CW (w/o air) = Port B to AB



Diverting Flow Action:
Full CCW (w/ air) = Port AB to A
Full CW (w/o air) = Port AB to B



Changing Fail Direction

1. If the fail direction needs to be reversed, remove the air pressure to the actuator.
2. Loosen the screw holding the non-rotation bracket and slide out the bracket enough to clear the actuator tab.
3. Remove the push-on retainer at the top of the shaft.
4. Slide the actuator off the shaft and flip it over.
5. Turn the valve full CCW direction and place the actuator onto the valve with "PRESSURE CW" showing on top.
6. Loosen the setscrews on the shaft collar under the actuator and adjust the position as necessary.
7. Re-engage the actuator tab in the non-rotation bracket and tighten the screws.
8. Reinstall the push-on shaft retainer.

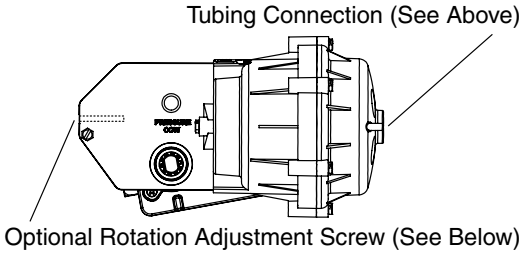
Connections

- Use 1/4-inch (6 mm) O.D. FR polyethylene tubing.
- Use only clean, dry control air. No attempt should be made to use any other medium.
- Connect the signal (0 to 20 psig) to the 3/16-inch fitting on the end of the actuator.

NOTE: **If the application requires operation near the maximum temperature and maximum pressure, add a tubing restraint to the actuator connection.**

⚠ CAUTION

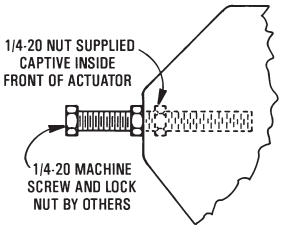
Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

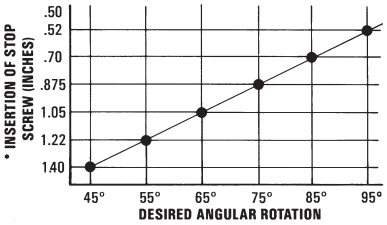


Adjustment

To limit actuator rotation:

1. Insert a 1/4-20 machine screw and nut into the front end of the actuator (see illustrations).
2. Refer to the graph for the desired rotation compared to insertion of stop screw length.





Maintenance

No routine maintenance is required. Each component is designed for dependable, long-term reliability, and performance. Careful installation will also ensure long-term reliability and performance.

⚠ DANGER

The MCP-3631 contains a large powerful spring. Exercise extreme caution if disassembly is ever required. The actuator shaft MUST be restrained to prevent the spring from expanding!

Specifications

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Normal Rotation	90°
Max. Close off	1/2 to 1" = 50 psi (345 kPa); 1-1/4 to 2-1/2" = 40 psi (276 kPa)
Flow Characteristics	Equal percentage (with optimizer insert)
Rangeability	500:1
Leakage	ANSI Class IV (<0.01% of Cv)
Temperature Limits	
Medium	–22° to 250° F (–30° to 121° C)
Operating	–20° to 180° F (–29° to 82° C)
Shipping	–40° to 140° F (–40° to 60° C)
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum
Supply Connection	3/16" (5 mm) fitting for 1/4" (6 mm) OD polyethylene tubing

NOTE: For more specifications, see the data sheets for the VCB-46 series valves (062-035-33) and the MCP-3631 series actuators (003-035-01). See also the installation guide for the MCP-3631 actuators (003-019-01).

Accessories and Repair Parts

HLO-1006	Replacement drive bushing, 1/2" round or 3/8" square shaft
HLO-1009	Replacement push-on shaft retainer
HPO-5072	Repair kit (bracket/linkage)
HPO-0038	Replacement diaphragm
HFO-0118	Gauge T, brass, 1/4" barbs to female pipe thread
ICI-1005	2" pressure gauge, 0–30 psi (0–2 bar), back-connected, 1/8" MPT

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