## INSTALLATION , OPERATION & MAINTENANCE

## AUTOMATIC BALANCING VALVES

### Installation

There are no minimum straight-piping requirements for the inlet or the outlet.. Valves may be installed in horizontal or vertical lines. the vertical flow can be up or down. The flow arrow on the valve must be pointing in the direction of flow. Avoid placing the valve close to a pump discharge. Allow 10' before the valve if possible. the model number gives the following information: body style, line size, end connections, P/T ports, GPM flow settings

### FLANGE AND GROOVE BODY PRODUCTS

Most flange products are not furnished with flange gaskets or bolts, and unless specified otherwise have 150# raised-face flanges. Standard installation techniques covering flanged products should be followed. All products have a flow direction arrow. Care must be taken to locate the valve so that the arrow is pointed in the direction of the flow. Grooved end products are to be installed using a "Victaulic-style coupling". The same installation techniques used to install standard "Victaulic" products should be followed. Care must be taken to assure the flow direction arrow is in the proper location.

### WAFER BODY VALVES (MODEL WB & WS)

Make sure the long bolts and nuts to secure the wafer body are included with the valve. Install the wafer body between 150# or 300# flanges making sure the flow arrow is in the direction of flow. The P/T ports should be vertical up. These ports can be used to vent air from each side of the body after filling and start-up.

### Operation

#### General

Flow control valves are purchased for a specific GPM flow rate and are equipped with a spring-loaded piston to maintain that flow rate. the first number is the differential pressure (psi) needed to achieve the GPM rating. the second number is the maximum D.P. when the rated GPM will be maintained.

#### Verifying Flow

The flow can be verified by measuring the DP (differential pressure) across the valve using the ports provided. If it measures between 2-32 the flow is usually in the specified flow range. Debris plugging one of the flow ports will cause the DP to read high, so make sure the unit is clean when verifying flow. There are several ways to measure DP directly.

#### Using a Strainer

A Y-strainer is recommended to prevent clogging. a 40-mesh screen is recommended for flows 1.5 GPM or less.

#### Accuracy

Accuracy is rated at 5% of the specified flow rate. Accuracy will vary with the temperature of the incoming fluid and specific gravity of the fluid. Rated flow rates are suitable for glycol solutions up to 50 percent.

## Air Purge

Automatic Balancing Valves will not work properly if air is trapped in the housing. Models with wafer bodies will always have a small amount of air because its body is higher than the top of the pipe. Air can cause a clicking noise in some valves. Air can easily be vented using the pressure of P/T ports. On small valves, 2" and under, the upstream port can be used. On larger steel valves, both ports should be purged because air can reside on both sides of the mid-plate. a simple way to purge air with P/T ports is to use a ¼" manual air vent (Model MAV) with a long gauge adapter.

## Maintenance

There is no maintenance required on Macon Balancing valves. If inlet strainers are used they should be inspected and cleaned after start-up and every six months thereafter.

## Troubleshooting

| Possible Cause | Possible Solution |
|---|---|
| • PROBLEM: Low Water Flow | |
| 1) Strainer clogged | 1) Back-flush or manually clean the coil strainer. |
| 2) Wrong location | 2) Make sure the valve is in the proper location with the correct GPM. |
| 3) Low system Pressure | 3) If possible, check the pressure at the hook-up supply and return valves. The drop through the coil and ATC valve may be too large for the available head. |
| 4) Balance valve plugged | 4) The Automatic Balancing Valve may have debris. Remove cartridge, clean and replace. |
| 5) ATC valve port closed or wrong Cv | 5) Make sure the ATC is wide open and has proper Cv. |
| 6) System valve is partially closed | 6) Open all manual system valves. |
| • PROBLEM: High Water Flow | |
| 1) Wrong location | 1) Make sure the valve is in the proper location with the correct GPM. |
| 2) System pressure too high | 2) Check the differential pressure across the Automatic Balancing valve. If larger then 32 psi, close the return-side ball valve until the difference is at the desired differential pressure below 32 psi. |
| 3) Automatic Balancing valve backward | 3) Check the flow arrow and reverse valve if necessary. |
| • PROBLEM: Noise or Vibration | |
| 1) Automatic Balancing Valve is noisy | 1) Check the Delta P across the Automatic Balancing valve. If at or near the maximum, it may be necessary to throttle the downstream valve to reduce the differential pressure below 32 psi<br>2) Make sure the air is purged from the system. Air can cause a clicking noise. WB/ WS valves require air purging on each side of the mid-plate.<br>3) Two Automatic Balancing valves close coupled in series can cause pulsing. |