

## *INSTALLATION & OPERATING INSTRUCTIONS*

### THREADED VALVE CONNECTIONS

Macon threaded connections are tapered type (NPT) and should be made up according to industry standards.

Inspect and clean pipe threads on both components and piping.

Apply sealant, either pipe dope or tape to the threads.

If the product contains a union nut, remove the nut and O-ring from the assembly. Place the union nut over the pipe past the threads. Install the tailpiece with a socket wrench.

Attach the body section to the other end of the piping.

Rotate the body using the hex flats nearest the joint being tightened. **Do not use a wrench on the main body of the component.** Position the body so that the PT Port, PTV, Vent, Drain Valve and or Valve Handle are in the proper position. Make sure that the flow arrow is pointing in the direction of the flow. After both ends of the valve are assembled to the piping, reinstall the O-ring and tighten the union nut hand tight and then tighten an additional quarter turn. Care must be taken not to cut or pinch the O-ring.

### SWEAT VALVE CONNECTIONS

Macon products with sweat connections are designed to be soft soldered.

Clean both copper tube and component ends with sand paper and / or a wire brush, wipe clean and apply flux uniformly.

If the product contains a union nut, remove the nut and O-ring from the assembly. Place the union nut over the copper tube past the flux surface. Install the tailpiece and / or body on the copper tube with a twisting motion to distribute the flux uniformly when inserted. Position the body so that the PT Port, PTV, Vent, Drain Valve and/or Valve Handle are in the proper position. Make sure that flow arrow is pointing in the direction of the flow.

**A heat sink is required during soldering.**

An appropriate heat sink is a wet rag wrapped around the component closest to the solder connection.

**Ball valves are required to be fully closed** during soldering to avoid deformation to the Teflon seat.

Valves should be allowed to cool before operating.

**Apply heat with the flame directed way from the center of the body .** Do not exceed the rated temperature of the component. Excessive heat will damage internal components such as O-rings, PT seals, and Teflon seats.

After the solder begins to melt, remove the flame and continue to apply solder until a ring is formed completely around the circumference of the joint. While the joint is still hot, remove excess flux and solder.

After both ends of the component have been assembled to the piping, reinstall the O-ring and tighten the union nut hand tight and then tighten an additional quarter turn. Care must be taken not to cut or pinch the O-ring.

The factory installed accessories (PT Port, PTV, Vent and Drain Valve) will withstand the solder temperatures if properly **heat-sinked with a wet cloth.**

## **INSTALLATION & OPERATING INSTRUCTIONS**

### **FLANGE VALVE CONNECTIONS**

Class 150 Valves are mechanically compatible with standard ANSI 150 lb, flat-faced or raised-faced steel flanges or with 125 lb, cast iron flanges.

Appropriated gasket material must be used when installing flanged-mounted flow control devices (for example 1/16" thick ring type fiber filled gaskets). (Not supplied by Macon). All products have a flow direction arrow. Make sure that it is pointing in the direction of the flow.

Installing the butterfly Valve:

**Do not use flange gaskets.**

The molded valve gasket will seal against the standard ANSI flanges.

Before tightening any bolts on the butterfly valve, turn the disk of the butterfly to the full open position. Center the valve and hand tighten all bolts. Slowly close the disk to check for adequate disk clearance. When properly aligned, return the disk to the open position and evenly cross-tighten all bolts. Make sure the disk opens and closes properly.

### **GROOVED END VALVE CONNECTIONS**

Grease the pipe ends, valve ends and rubber gasket lips with grease, graphite paste or similar grease.

Slip the rubber gasket over the pipe end of each joint. Slide the gasket past the grooves. Position the grooved end valve between the pipe ends and slide the gaskets back into the central spanned position.

All products have a flow direction arrow. Make sure that it is pointing in the direction of the flow. Apply grease on the outside of the gasket. Install housing clamps over the gasket – insert bolts and nuts.

Tighten nuts evenly, using socket or other wrench. Tighten so that housing clamps come together evenly. The connection is complete when housing clamps meet metal to metal, further tightening of bolts is not necessary.

Pre-assemble large diameter multi-segment housing clamps loosely and install them as half-housings. Take up evenly from top to bottom on alternate bolts.

### **WELD END VALVE CONNECTIONS**

Clean the end of the pipe and the valve where the welds will be made. Make up the assembly butting the connections together. All products have a flow direction arrow. Make sure it is facing in the direction of the flow. Tack weld the assembly together and observe the fit.

**Warning: If the valve contains a butterfly valve do not finish welding the assembly with the butterfly valve installed between the flanges. This will result in serious damage to the valve seat.**

## INSTALLATION & OPERATING INSTRUCTIONS

### PRESSURE TEMPERATURE PORT (PT) / PRESSURE TEMPERATURE VENT (PTV)

PT Ports and PTV are typically factory installed. Factory installed accessories (PT Port, PTV, Vent and Drain Valve) are installed with a hydraulic sealant and should not be disturbed. If it is absolutely necessary to remove, tighten and/or adjust an accessory, it should be cleaned and resealed with new sealant and/or Teflon tape.

Care should be taken not to over tighten.

Field installations are done in accordance with general plumbing/fitting practices. Pipe dope or Teflon tape should be used to seal threads.

**Do not expose PT Ports and PTV** to soldering, brazing or weld heat. Complete this work before installing the PT Ports and/or PTV.

The PTV should always be installed in a vertical position.

It is preferable to install the PT Port horizontally or higher.

Do not install down at the 6 o'clock position.

#### SAFETY INSTRUCTIONS

Seals are made of EPDM. EPDM is compatible with hot and cold water. EPDM is resistant to: glycol, alcohol, phosphates, esters, ketones and detergents.

**Do not use with:** Petroleum products, hydrocarbons solvents and/or oils, chlorinated hydrocarbon or turpentine.

Always wear eye protection when using PT Ports and/or PTV.

Attach a drain hose to the hose barb connection for collecting water or water vapor from the PTV. Always use a pressure gauge with a rating greater than the pressure in the system.

Recommended for use in hydronic systems only.

Not recommended for gas, steam or high temperature hot water.

#### OPERATION

PTV Venting:

Venting is achieved by rotating the valve body  $\frac{1}{2}$  turn or until you hear air escape. Close valve when venting is completed.

PT Port and PTV Temperature/Pressure Readings:

Remove cap slowly, look and listen for leaks.

Remove any foreign material from the entrance hole.

Select either the pressure or the temperature device to be used. Examine the probe and remove any existing burrs. Apply silicone lubricant to the probe, especially for first time use. Insert probe slowly with a twisting motion. As soon as the necessary readings and adjustments are made, remove the probe and replace cap.

#### MAINTENANCE

If the device leaks persistently, replace it.

Keep debris out of the device and keep caps on.



## INSTALLATION & OPERATING INSTRUCTIONS

### 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 flow arrow on the valve body must be pointed in the direction of flow.

Avoid placing the valve close to a pump discharge. Allow 10' before the valve if possible.

#### OPERATION

Macon Automatic Balancing Valves incorporate a removable flow cartridge that is factory set to limit the GPM to within  $\pm 5\%$  of the specified flow.

The flow can be verified by measuring the differential pressure (D.P.) across the valve using the PT Ports provided.

If it measures between 2-32 the flow is within the specified flow range.

#### MAINTENANCE

There is no periodic maintenance required on the Automatic Balancing Valve.

Using a Y strainer is always recommended to prevent clogging. A 40 mesh screen is recommended for flow of 1.5 GPM or less.

The controlled flow rate can be changed in the field without having to remove the valve from the line.

Isolate the system, relieve pressure and drain water. Carefully remove the cap and pull out the cartridge with your fingers. When refitting make sure the O-ring on the cartridge and cap are in place.

### MANUAL BALANCING VALVES

#### INSTALLATION

Macon Manual Balancing Valves & Venturi's are unidirectional, observe flow arrows.

All models can be installed in horizontal or vertical pipe.

#### STRAIGHT-RUN REQUIREMENTS

The MB models have the necessary straight-run length built in and can be installed directly downstream of a 90 degree elbow or a control valve. If the control valve is smaller than the MB, then the reduction can be done with a Macon tailpiece or reducing coupling to insure a proper reading.

Models MBF, VF, VG and VW require three upstream pipe diameters from a 90 degree elbow and five pipe diameters from control valve. Two pipe diameters down stream are required.

Tap Locations (Pressure Taps or PT Ports).

For portable D.P. metering, the taps can be pointing at any clock location, except at 6 o'clock.

Optional accessories such as air vents should always point up and drain down.

#### OPERATION

The flow is determined by measuring the differential pressure (D.P.) across the high (Red) and low (Blue) taps on the venturi. Convert the measured D.P. to inches W.C. and use the appropriate Macon chart to read the flow.

#### CHART

#### MODELS

|              |                                |
|--------------|--------------------------------|
| FCMB-1119-08 | .50" – 2.00" MB                |
| FC1-1119-08  | 2.50" – 6.00" MBF, VF, VG, VW  |
| FC2-1119-08  | 8.00" – 12.00" MBF, VF, VG, VW |

Models MB and MBF are equipped with a downstream throttling valve to adjust the flow.

Slowly close the valve while reading the D.P. gauge until the desired flow is reached. Set the memory stop so the handle position is maintained even if the valve is temporarily closed.

#### MAINTENANCE

There is no periodic maintenance required on these devices.