

## Guide Specifications

### A. Manufacturers:

1. Flow Design Inc.

### B. Design:

1. Flow devices shall be Venturi type as recommended by ASHRAE.
2. Devices shall have a precision machined throat and have a stated catalog accuracy of 3% F.S.
3. MINIMUM GAUGE READING:
  - The gauge reading (flow signal) shall be at least two feet at the design flow with the valve in the wide-open position.
4. The valves are to have differential readout ports fitted with check valve and protective cap, and are to have a memory stop to allow complete shut-off and return to set position without losing the set-point.
5. PUMP HEAD REQUIREMENT:
  - The permanent pressure loss added to the pump head shall not exceed two feet, per device, at the design GPM in the wide-open position.

### C. Construction:

1. All devices shall have a Venturi section and a throttling valve with a memory stop on the downstream side of the Venturi.
2. The ball valve (sizes 1/2" - 2") shall have a brass or bronze body, blowout-proof stem, virgin Teflon seats, brass stem, stem seals and a steel handle.
3. All butterfly valves 2" to 14", shall be cast iron full-lug type, with EPDM seat, 416SS stem, bronze sleeve bearing and bronze disk.
4. All valves 1/2" to 2" shall be factory leak tested at 100 psi air under water.

### D. Minimum Ratings:

1. Devices with sweat or NPT connections 1/2" - 2": 400 PSIG at 250°F.
2. Devices with flanged connections 2" - 14": 240 PSIG at 250°F.

### E. Readout Meter Kit:

Provide a portable readout meter kit by the manufacturer of the balancing devices.

1. The meter shall be housed in a durable case complete with two 10' color coded hoses with shut-off valves at the end that connects to the balance valve so that water does not drain out between readings.
2. Meter shall have a 6" diameter face and  $\pm 1.75\%$  full-scale accuracy.
3. Meter shall have a forged brass body and a three-valve manifold for over-range protection.
4. Meter shall have a dual scale reading inches and feet W.C.
5. Meter shall be equal to Flow Design Model 300.4.

### F. Installation:

1. The straight pipe required to achieve 3% F.S. accuracy shall be incorporated as an integral part of the 1/2" to 2" Venturi and valve assembly. Five pipe diameters of straight pipe are required from a control valve for size 2 1/2" to 14" Venturis.
2. Install balancing valves on the return lines of the coils as recommended by ASHRAE.
3. Install in accordance with the manufacturer's instructions.