

Guide Specifications

At the option of the mechanical contractor and with the approval of the engineer, calibrated venturi balancing valves as manufactured by Flow Design, Inc. or approved equal may be substituted for balancing fittings. These fittings shall be installed to provide flow measurements, regulate flow and provide shut-off services. When venturi balancing valves are installed with three-way control valves, a union and pressure/temperature test port shall be on the entering line of the control valve. Valves shall have optional extended handles and test ports to clear insulation.

A. Manufacturers:

1. Flow Design, Inc., Models AF, AW, AG, EF, EG, ER, ET, UA, VF, VG AND VW or equal.

B. Design:

1. Flow devices shall be Venturi type as recommended by ASHRAE.
2. All calibrated venturi balancing valves shall be supplied by single source. The system shall be fully engineered by the fitting supplier.
3. Devices shall have a precision machined throat and have a stated catalog accuracy of 3% F.S.
4. 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.
5. The valve shall have differential readout ports fitted with self sealing seals to act as a check valve. The ports shall be provided with a protective cap.
6. It shall have a memory stop to allow complete shut-off and return to set position without losing the set-point.
7. 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. Material for the valve bodies shall be DZR brass or Ametal or steel and the venturi body will be brass or steel.
3. The ball valve (sizes 1/2" - 2") shall be Dezincification resistant brass (DZR) or bronze or Ametal body, blowout proof stem, virgin Teflon seats, brass stem, EPDM O-ring and teflon packed stem seals and steel handle. All ball valves shall conform to MSS-SP-110 standard or equal.
4. All butterfly valves 2" to 14", shall be ductile iron full-lug type, with EPDM seat, stainless steel stem, and stainless steel/bronze disc. All butterfly valves shall conform to MSS-SP-67-2002a and API 609, face to face dimensions for category A standards or equal.

D. Testing and Ratings

1. All valves 1/2" to 2" shall be factory leak tested at 100 psi air under water.

Minimum Ratings:

1. Devices with Sweat or NPT connections 1/2" - 2": 600 PSIG at 250°F
2. Devices with flanged connections 2" - 14": 240 PSIG at 250°F

E. Readout Meter Kit:

1. Flow Design recommends using Model 300.4 portable readout kit to measure flow or differential pressure, available at an additional charge.

Guide Specifications (Cont'd)

Model 300.4 Meter Kit consists of the following:

- a) The meter is 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.
- b) Meter is made of forged brass body and has three-valve manifold for over-range protection. It has a 6" diameter face and +1.75% full-scale accuracy.
- c) The meter has a dual scale reading in both inches and feet of W.C.

F. Installation:

1. For systems, where the elbow or the control valve is line sized, no additional pipe diameter straight run length shall be required upstream or downstream of all Flow Design's manual balancing valves.
2. For systems, where the elbow or the control valve is not line sized, five pipe diameters of straight pipe shall be required upstream of the manual balancing valve to achieve 3% F.S. accuracy. No pipe diameter shall be required downstream off the manual balancing valve. Flow Design's manual balancing valves UA, ET, EF, EG and ER have the necessary straight run length built-in (for model UA with Flow Design's end connections) and can be installed directly down stream of a 90° elbow or a control valve. All other Flow Design's manual balancing valves shall require three (elbow) or five (control valve) pipe diameter of straight run upstream where the elbow or the control valve is not line sized.
3. Balancing valves shall be installed on the return lines of the coils as recommended by ASHRAE.
4. All balancing valves shall be installed in accordance with the manufacturer's instructions.
5. It is recommended to check connections after installation for leaks.

G. Packaging:

1. All fittings needed for each individual coil shall be shipped from the factory in a single container which shall be labeled to indicate the appropriate terminal.
2. The packages for individual terminals shall further be grouped according to individual floors or regions of the building for easy routing to the appropriate location.

H. Quality Assurance:

1. The producer of automatic or manual balancing fittings shall have current ISO 9001 Certification.