



# Balancing Valve Performance Specifications-Summary

## AUTOMATIC & MANUAL BALANCING VALVES

**Automatic** Flow Control Valves shall be factory set to a rated flow, and shall automatically control the flow to within  $\pm 10\%$  of the rated value over a 40 to 1 differential pressure, operating range, (2 to 80 psid<sup>1</sup>). Valves shall have the capabilities and pressure ratings as indicated and conform to this specification.

**Manual** Flow Control valves are Venturi type balance valves with a Venturi insert. Various Cv's per valve size. Working Pressure Rating shall be per ASME B31.9 Building Services Piping. Valve bodies are suitable for 600 psig.

## FLOW CONTROL

Hays Automatic Balance Assembly shall include one or more precision sculptured brass or polyphenylsulfone orifices with an elastomeric diaphragm. Each automatic balancing valve will automatically control the flow rate to within  $\pm 10\%$  of its rated flow, over a temperature range of 32 to 225°F, and a pressure differential range of 2 to 80 psid<sup>1</sup>. Flow rates available from 0.125 to 36,000 gpm. Flow rates vary by model number and size.

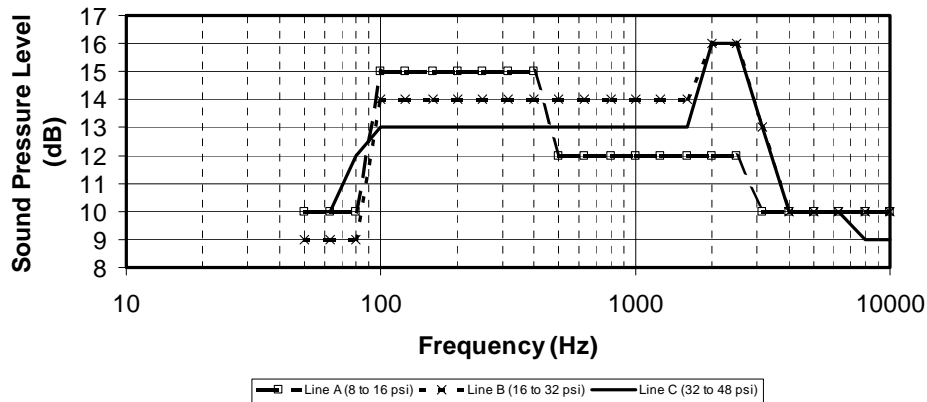
Noise created by the valve shall not exceed the following limits at a Reynolds number of 5,000 and inlet velocity of 1.4 ft/s when tested per Hays Fluid Controls Specification Number 10020505:

- Below 8 psi the noise generated by the valve shall be less than 24dBA pressure level, 35 dBA power level. Unit sound pressure levels at the 1/3 octave band level shall not exceed ambient sound pressure levels by more than 3 dBA.
- Above 8 psi and at or less than 16 psi the overall sound power level when A-weighted shall not exceed 35 dBA, the overall sound pressure level shall not exceed 25 dBA. Maximum 1/3 octave sound pressure levels shall not exceed those of line A in Figure 1.
- Above 16 and less than 32 psi the overall sound power level when A-weighted shall not exceed 35 dBA, the overall sound pressure level shall not exceed 25 dBA. Maximum 1/3 octave sound pressure levels shall not exceed those of line B in Figure 1.
- Above 32 and less than 48 psi the overall sound power level when A-weighted shall not exceed 35 dBA, the overall sound pressure level shall not exceed 25 dBA. Maximum 1/3 octave sound pressure levels shall not exceed those of line C in Figure 1.

<sup>1</sup> At low differential pressure the flow area required to achieve higher flow can exceed the flow area available for the respective series. Therefore, the minimum pressure differential requirement is increased for the higher flow ranges of each series Mesurflo valve.

Hays Fluid Controls specification 10020505 requires that testing is conducted in accordance with ANSI (American National Standards Institute) S12.51-2002, "Acoustics – Determination of Sound Power Levels of Noise Sources Using Sound Pressure – Precision Method for Reverberation Rooms". The laboratory facility shall have been qualified in accordance with ANSI Standard S12.51-2002. The measurement space shall be qualified in accordance with the test standard. Equipment shall be mounted using isolators on rigid base. The rigid base shall be at least four times the weight of the test specimen and all attached hard plumbing. All plumbing not part of the device under test shall be installed and treated to minimize acoustic contribution. The connection from the inlet tube to the water source shall be a hose made from a resilient material such that vibrations from the flow/pressure source to the device under test are minimized.

**Figure 1 - Specification Requirements Flow Control Device Noise Generation**



**BODY STYLES**

**Y-BALL MESURFLO**

Ball valve, combination automatic flow control valves, shall be made of hot forged brass UNS C37700 per ASTM B-283 latest revision, using full port balls, blowout proof stems, and shall be rated for 600 psig. Sweat fittings 1/4, 3/8, 1/2, 3/4, 1 & 1 - 1/4 inch shall be suitable for 600 psig. Working pressure rating per ASME B31.9 Building Services Piping. Threaded fittings 1/2 through 1 1/2 inch shall be suitable for 600 psig. Working pressure rating per ASTM A53B for threaded joint, type extra weight, of the pipe size indicated (For most Building Services Applications, ANSI Class 125 rating). Flow rates from 0.5 to 25.0 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>. Flow rates shall be field changeable without breaking the piping connections. For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher.

<sup>1</sup>At low differential pressure the flow area required to achieve higher flow can exceed the flow area available for the respective series. Therefore, the minimum pressure differential requirement is increased for the higher flow ranges of each series Mesurflo valve.

## INLINE

Threaded Valves ½, ¾, 1, 1¼, 1½ inch NPT valve body, shall be constructed of hot forged brass UNS C37700 per ASTM B-283 latest revision, or UNS C36000 per ASTM B 16 latest revision. These valve bodies are suitable for 600 psig.

Threaded valves 1, 1-1/4, 1½, & 2, NPT, valve body may be constructed of gray iron. 2, 2-1/2" & 3" may be constructed of ductile iron per ASTM A 395-80, valve grade cast iron per ASTM 126-84 class B or UNS C84400 cast semi-red brass, with inch size pipe thread fittings per ASME/ANSI B1.20.1, and B31.9. These valve bodies are suitable for 400 psig. Working Pressure rating per ASTM A53B for threaded joint type, standard weight, of the pipe size indicated. (For most applications, ANSI Class 125 rating.)

Flow rates from 0.5 to 225 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>. For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher.

## FLANGED 2, 2 ½, 3, & 4, INCH

Valve body shall be constructed of carbon steel. Valve bodies are suitable for 400 PSIG. Flanges are welded wrought steel per ANSI 16.5-1968, or MSS-SP-44 150 lb. Working pressure rating per ANSI Class 150. Flow rates from 9.0 to 225 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>.

For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher

## FLANGED 6, 8,10,12,14,16, 18, 20, 24, 30 & 36 INCH

The external housing shall be carbon steel tubing per ASTM A 53 Grade B, Type S or E, with carbon steel ends per ANSI B16.9, and ASTM A234. Grade B. Valve bodies are suitable for 400 psig. Flanges are welded wrought steel per ANSI 16.5-1968, or MSS-SP-44 150 lb. Working pressure rating per ANSI Class150. Flow rates from 120 to 36,000 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>. For flow velocities exceeding 7.0 feet per second, pressure drop may be proportionally higher.

## STEEL WELDED

Welded valves 4, 6, 8, & 10 inch shall have an external housing of carbon steel per ASTM A 53 Grade B, Type S or E, with carbon steel ends per ANSI B16.9, and ASTM A234 Grade B. End fittings per ASME A181 Grade 1. Working pressure rating per ASTM A53B; 430 psig 4 inch, 600 psig 6 inch, 500 psig 8 inch, and 400 psig 10 inch. Flow rates from 120 to 36,000 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>. For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher.

**<sup>1</sup>At low differential pressure the flow area required to achieve higher flow can exceed the flow area available for the respective series. Therefore, the minimum pressure differential requirement is increased for the higher flow ranges of each series Mesurflo valve.**

## GROOVED END

Grooved end valves 4, 6, 8, & 10 inch shall have an external housing of carbon steel per ASTM A 53 Grade B, Type S or E, with carbon steel ends per ANSI B16.9, and ASTM A234 Grade B. Grooved end fittings per ANSI B31.9, and NFPA 13. Working pressure rating, 430 psig 4 inch, 600 psig 6 inch, 500 psig 8 inch, and 400 psig 10 inch. Flow rates from 120 to 36,000 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>. For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher.

## COPPER SWEAT

Inline copper sweat valves 1/2, 3/4, 1, & 1 1/4 inch shall consist of a wrought copper (ASTM B88-83a) housing. Valve bodies are suitable for 522 psig. Working pressure rating per ASME B31.9 Building Services Piping. Flow rates from 0.5 to 25 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>.

Ystyle servicable sweat valves (1/2, 3/4 inch) shall consist of of hot forged brass UNS C37700 per ASTM B-283 latest revision, or UNS C36000 per ASTM B 16 latest revision. Valve bodies are suitable for 600 psig. Working pressure rating per ASME B31.9 Building Services Piping. Flow rates from 0.5 to 9.00 gpm will have a differential pressure operating range of 2 to 80 psid<sup>1</sup>.

## ACCESSORIES

### PT EXTENSION ADAPTER

Extension adapter shall include either a pressure or pressure/temperature test port for measuring the temperature and/or pressure differential across the terminal unit.

### IDENTIFICATION TAG

All valves labeled with model no., size & flow rate. Additional stainless steel metal tags are available for purchase if needed.

### MARKING

All valves are marked showing the direction of flow, flow rate, manufacturer and model number.

### MOUNTING

Valves may be mounted in any attitude, and do not require straight sections of pipe, either upstream or down stream for proper operation.

### WARRANTY

See Hays Fluid Controls current Terms & Conditions for warranty information.

**<sup>1</sup>At low differential pressure the flow area required to achieve higher flow can exceed the flow area available for the respective series. Therefore, the minimum pressure differential requirement is increased for the higher flow ranges of each series Mesurflo valve.**