



# WaterSource Heat Pump Hose Kit Performance Specification-Summary

## AUTOMATIC & MANUAL BALANCING HOSE KITS

Contractor shall provide and install Hays Hose Kits. Each kit, shall include a Hays 2500 Series Mesurflo Automatic Flow Control Valve or Manual Venturi Type Balance Valve, along with two flexible hoses, one non-ported ball valve, a ball valve with Pressure/Temperature Port and may include; an electric control valve, high flow "Y-ball" strainer for sizes ½"-2" and various other accessories.

## FLOW CONTROL VALVES

**Manual** flow control valves are Venturi type balance valves with a Venturi insert. Various Cv's per valve size. Ball valves shall be made of forged brass and meet or exceed Hays specifications. WOG of 600 psig and temperature range of 32° F to 225° F. NPT per ASME/ANSI B1.20.1 & B31.9.

Working Pressure Rating shall be per ASME B31.9 Building Services Piping.

**Automatic** flow control valves shall be factory set to rated flow, and shall automatically control the flow to within  $\pm 10\%$  of the rated value, over an 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. Operational temperature shall be rated from fluid 32° F to 225 °F.

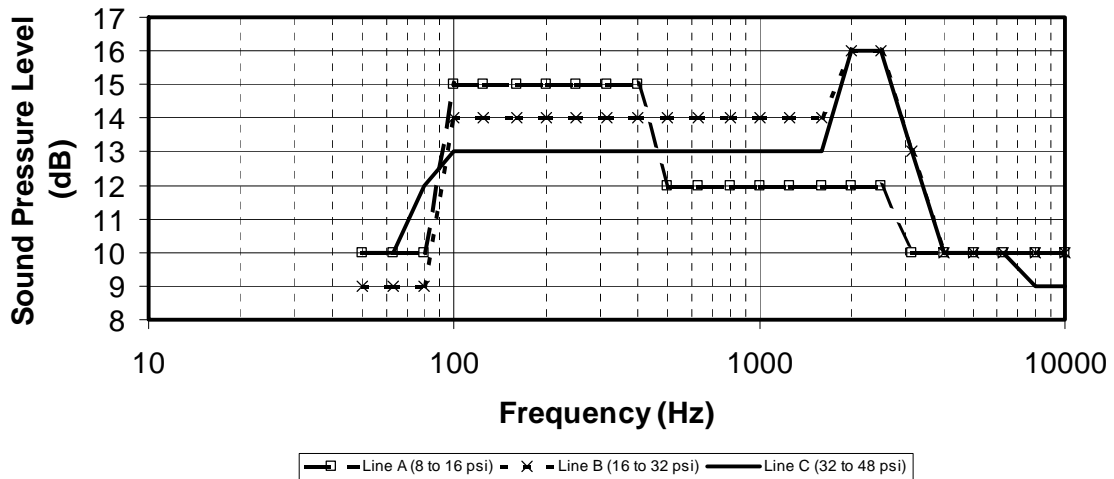
Noise created by the Hays Automatic Balance valve shall not exceed the following limits at a Reynolds number of 5,000 and inlet velocity of 1.4 ft/s when tested per Hays Fluid Controls Specification Number 10020505:

- 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**



**MESURFLO**

The Automatic Flow Control Valve body shall be constructed of hot forged brass UNS C37700 per ASTM B-283 latest revision, UNS C36000 per ASTM B 16 latest revision, ductile iron per ASTM A 395-80, valve grade cast iron per ASTM 126-84 Class B, or UNS C84400 Cast Semi-Red Brass. Pipe thread fittings shall be inch sized per ASME/ANSI B1.20.1, and B31.9. UNS C37700 and UNS C 36000 Valve bodies are suitable for 600 PSIG. Iron, and Cast Brass, Valve bodies are suitable for 400 PSIG. Working Pressure rating per ASTM A53B threaded joint type.

**Y-BALL MESURFLO**

Combination Ball valve and Automatic Flow Control Valves, shall be made of hot forged brass UNS C37700 Per ASTM B-283 Latest Revision blowout proof stems, and shall be rated for 600 psig WOG. Working Pressure Rating shall be per ASME B31.9 Building Services Piping. Threaded fittings 1/2 through 1½ inch shall be suitable for 600 psig. Working Pressure Rating shall be 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>. For flow velocities exceeding 7.0 feet per second, pressure drop will be proportionally higher. Flow rates shall be field changeable without breaking the piping connections.

Valve internal control mechanism shall be of a quiet, clog resistant design and consist of one or more high temperature elastomeric diaphragms and precision orifices with sculptured orifice seat.

Dual pressure/temperature test ports for verifying the pressure differential and temperature shall be standard.

All valves shall show as a minimum controlled flow direction, flow rate, manufacturer and model number.

## **SUPPLY AND RETURN HOSES**

All hoses shall be equipped with swivel end connections at terminal unit, unless Y-Ball Mesurflo with its built in union is supplied. All end connections shall be permanently crimped to meet stated pressure ratings.

## **STAINLESS STEEL BRAIDED HOSES**

Hose materials shall be reinforced, bonded, EPDM rubber. Working pressure meet or exceed Hays Fluid controls specifications of 400 psig. Minimum burst pressure shall be four(4) times the working pressure at maximum rated temperature.

Hose materials shall be stainless steel braid over an EPDM liner. Hoses meet or exceed Hays Fluid controls temperature specifications of 32° F to 225° F.

Hose swivels shall use self actuating fiber gaskets (1/2"-1-1/4"). All ferrules shall be 300 Series Stainless steel. Hose connections will be Brass UNSC36000, with National Pipe Threads per ANSI B1.20.3, Type 1 class 1.

All ferrules for size 1-1/2" shall be 304 Series Stainless steel with integral swivel on one end. Hose connections will be zinc plated steel with National Pipe Threads per ANSI B1.20.3 Type 1 class 1.

## **BALL VALVES WITH & WITHOUT UNION END**

Ball valves shall be made of forged brass and meet or exceed Hays specifications. WOG of 600 psig and temperature range of 32° F to 225° F. NPT per ASME/ANSI B1.20.1 & B31.9.

**<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.**

Ball valves may be provided with an optional pressure/temperature ports, pressure taps, or manual air vent. Also features a double O-ring, blow-out proof stem design, and PTFE seats and plated brass ball.

## **ACCESSORIES**

### **STRAINER**

Strainers shall be Y-Ball type configuration made of bronze with a brass cap. Cap shall be sealed with a non-asbestos gasket or o-ring. Strainer bodies shall be suitable for 600 WOG at a minimum temperature of 32 °F to 225 °F. Working Pressure Rating shall be Class 125. The strainer shall have solder sockets to ANSI B16.18. Strainer screen shall be stainless steel, with 20 mesh, and easily accessible for cleaning without disconnecting hoses. Strainers meet or exceed Hays specifications.

Y-Ball Strainer shall be offered with a one or more pressure/temperature ports, lever handle and blowdown valve with hose connector. Options include extended handles and extended pressure/temperature ports.

### **ELECTRIC CONTROL VALVE**

The Electric Control Valve shall be of the low power type (6.0 Watts 6 VA). The motorized head shall be removable, have 39 inch 18 gage leads, and be housed in a plenum rated enclosure with conduit connection.

The valve body shall be constructed of hot forged brass UNS C37700 per ASTM B-283, with inch size pipe thread fittings per ASME/ANSI B1.20.1 and B31.9. The flow cartridge shall be made of stainless steel, polyphenylene sulfide polyphenylene oxide and EPDM. All materials shall be suitable for use with hot and chilled water at up to 50% Ethylene or Propylene Glycol and operating temperatures of 34 to 203 °F.

½"-1" Fail-In-Place, Zone Valve, Electric Control Valves offer various Cv's for 2-Way, 3-Way On/Off, Floating and Proportional control. Valves shall be rated for 400 psi, with close off pressure of 60 psi max. Drive time on/off 6 seconds. Floating or Proportional 120 seconds.

½"-1" Spring Return, Zone Valve Electric Control Valves offer various Cv's for Normally Open, Normally Closed, 2-Way, 3-Way, On/Off control only. Valves shall be rated for 400 psi, with close off pressure varying from 10 psi to 50 psi, depending upon valve size and Cv. Dive time 15 seconds.

1-1/4" and larger Spring Return Ball Valve Electric Control Valves offer various Cv's for Normally Open, Normally Closed, 2-Way, 3-Way, Floating or Proportional Control. Valves shall be rated for 360 psi, with close off pressure varying depending upon valve size, type and Cv. Timing: On/Off <50 sec. open, <28 sec.close, Floating or Proportional <130 sec. open, <25 sec. close.

## **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.

### **WARRANTY**

See Hays Fluid Controls current Terms & Conditions for warranty information