

## VS-41 Self-Acting Differential Pressure By-Pass Valve

### Description

The VS-41 differential pressure regulating valve is used to limit the differential pressure of reverse return and other types of water systems controlled by 2-way control valves. As the control valves in a building close, the water circulation in the building becomes restricted, and the differential pressure across the valve increases to the point that the water passing through the valves will start to squeal and the valve internals can become damaged, the modulating control becomes difficult or impossible to achieve.

### The usual corrective action is to:

- 1- Reduce the water temperatures during mild weather so that the control valves must open wider and modulate better
- 2- Supply 3-way control valves with by-pass instead of 2-way control Valves
- 3- Reduce the differential pressures by one of several methods (see Spartan publications Valve Selection Guide and Control of Building Differential Pressures on Building Risers) one of the methods is to supply a VS-41 differential pressure regulators

These VS-41 regulators offer the advantage of controlling the pressures where pressure is important. Usually, a large bypass valve controlled by a differential pressure regulator is installed across the circulating pump. They reduce the differential pressure for the entire building.

VS-41 regulators are installed in the reverse return loops, one per floor. In this way, the differential pressure is controlled at the respective loop, the riser differential pressure remaining untouched and able to pump to other floors or areas.

### Benefits of the VS41:

- Less costly
- Simple to install and more precise (controlling zones rather than the entire system)
- Easy to adjust
- Self acting
- Suitable for new installations or retrofits

### VS-41 regulators come in two ranges:

- VS-4110 - 0.15 to 0.70 bar; or 2 to 10 psi
  - VS-4120 - 0.70 to 1.40 bar; or 10 to 20 psi
- 1" NPT x 1" NPT female x female threaded ports. Supply at bottom port. For all hot and chilled water applications or 50% glycol mix

### Specifications:

**Body:** Brass CW617N

**Cap:** ABS

**Internal Spring:** Stainless Steel

### Installation Instructions:

VS-41 differential by-pass valves are installed strategically throughout the building. Generally speaking, provide one valve for each 50 U.S. gallons pumped, i.e. each VS-41 can by-pass up to 50 U.S.GPM with a differential pressure of 10 psi.

The VS-41 remains closed when the pressure is less than set point. As control valves close, the VS-41 modulates open to by-pass the amount of water usually passed by the control valves. Differential pressure is therefore kept constant in the respective loop.

