ITT

Circuit Sentry™ Cartridge

The Difference in Automatic Flow Limiting Valves

The Circuit Sentry Difference:

- All flow must go through the cartridge orifice plate giving complete and accurate control ±5%
- Unique rolling seal for accurate control, extended 2 – 60 PSID operating range and quiet operation
- Large, open flow paths for clog-free operation
- Keeps fluid flow constant, automatically compensating for fluctuating system pressures
- No requirement on pipe length before and after the valve, making application and piping easier
- Get peak performance from HVAC systems with no adjustments required

Engineered for life

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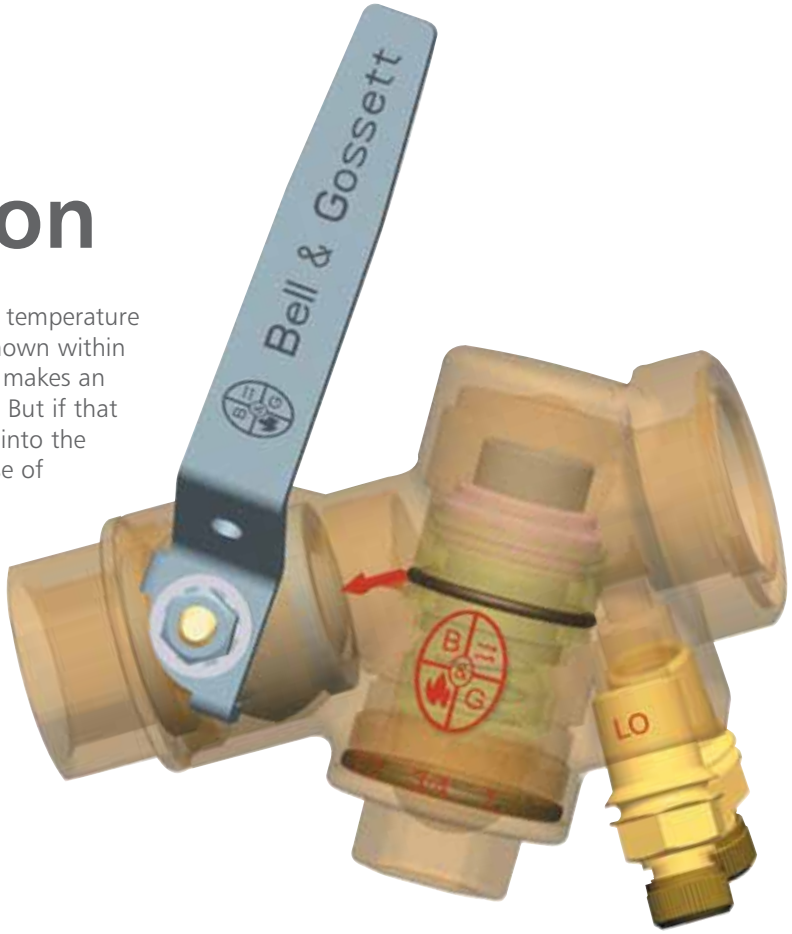
B&G®

The total system solution

You've been there before: an occupant has a space temperature complaint but the cause may be complex and unknown within the hydronic system. The building manager quickly makes an adjustment to the controls and solves the problem. But if that doesn't work, he may start to adjust the fluid flow into the affected area, not taking into account the real cause of the problem or how this adjustment may affect the total system.

The Circuit Sentry, with its unique flow control cartridge, is the perfect solution for this type of situation. Circuit Sentry is made of Dezincification Resistant (DZR) Brass, and designed for the flow limiting style of balancing both HVAC cooling and heating circuits.



Automated performance

The Circuit Sentry automatically helps ensure that all circuits receive their design flow. This is achieved by selecting the correct overall flow, and limiting the flow into each circuit so that one circuit will not take flow from others in the system. If the improper flow is caused by a change in pump speed, two- or three-way valves, or because hydronic balance was never achieved, the Circuit Sentry will work to provide the design flow when installed.

Accurate
The unique cartridge design demands that all flow pass through the control orifice giving complete and accurate flow control ±5%.

Non-Clogging
The Circuit Sentry Cartridge never seats, leaving the pressure control element partially open at all times to provide for clog-free operation.

Quiet
The cartridge's unique rolling seal ensures that no flow passes between its moving elements, thus eliminating noise and unstable operation.

Flexible
The Balancing Agent can often adjust the flow rate of the fluid by simply changing the cartridge's orifice.

A rolling seal makes the difference

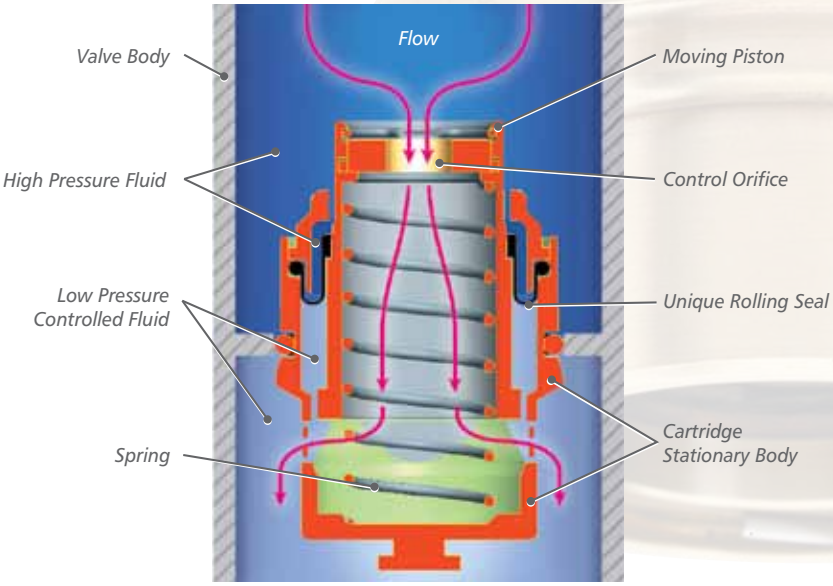
A unique rolling seal separates the high-pressure fluid from the lower-pressure controlled fluid.

- Greater accuracy of flow control
- Field-adjustable flow rates
- All flow is controlled
- Valve life is extended
- Wider range of operation
- Valve hunting is eliminated

All flow must go through the orifice plate entrance of the cartridge. Flow between the moving piston and stationary body has been eliminated, so all flow is controlled. Any velocity noise or valve chatter that could be caused by bypassing fluid is also eliminated.

Thanks to the use of opposing forces, the cartridge never fully seats, leaving wide open flow channels and preventing spring distortion found in other cartridges. This means that at the design range of the cartridge, ports are wide open and the unit will pass solids up to a 1/16 inch in diameter.

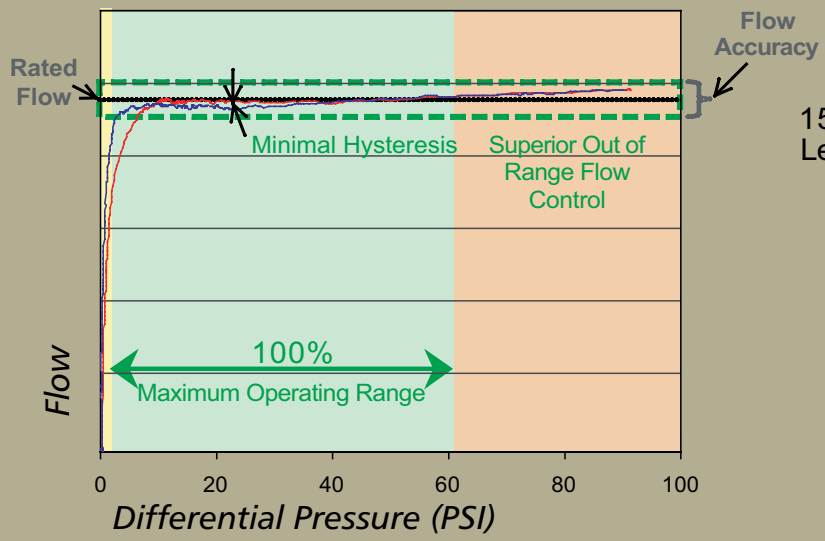
Engineered flow paths act as pressure snubbers to stabilize pressure control. In conjunction with the EPDM rolling seal, this snubbing effect controls the speed of piston movement, reducing wear on the cartridge parts and eliminating any possibility for the piston to rapidly bottom-out, causing a nuisance water-hammer-type noise.



A tale of two valves...

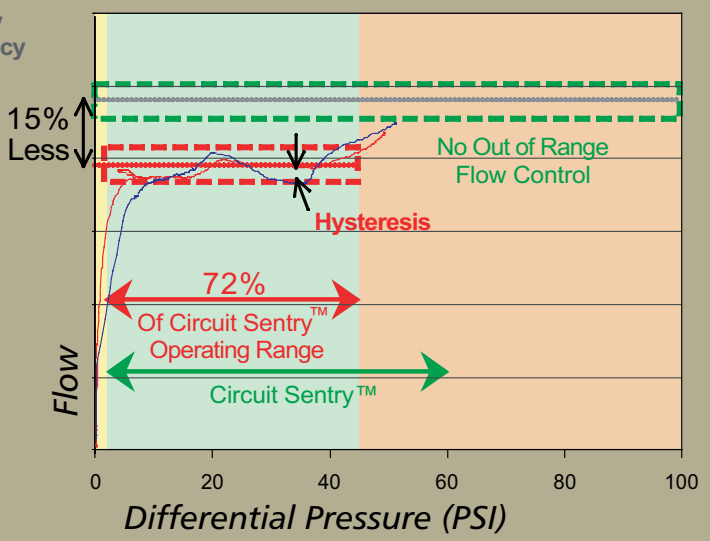
Two valves chosen at random, one rated flow control point. While both control flow to ±5%, one does it at 15% less flow than required. While the control is within a limit, it's not the rated limit, and it is with a lesser differential pressure operating range than that provided with the unique features of the flow controller of the Circuit Sentry™. Those features also help provide a more stable overall flow control, not cycling between high and low limits, and when looking at rising (red) and lowering (blue) differential pressure curves, less hysteresis is exhibited (a difference in flow at the same measuring point common to mechanical control devices). As with any variable orifice valve, after the flow control element reaches its rated operating differential pressure, flow immediately increases outside the rated accuracy as should be expected, but on the Circuit Sentry™, its superior pressure-regulating flow controller continues to maintain steady control of rated flow.

Circuit Sentry™ Flow Test...



The unique features of the cartridge and unprecedented control of branch flow for any HVAC circuit can be seen in Graph 1. Even when differential pressure is increased to 1.5 times the rated operation of the cartridge flow, control is maintained.

Brand "X" Flow Test...



Variable-orifice cartridges aren't designed for this precise flow control and often require as many as four different spring ranges to achieve similar results for one flow.

Circuit Sentry Valve Kit

The Bell & Gossett valve kit is a packaged and partially pre-assembled collection of common components required for commissioning a terminal unit.

A – Model UBY - Combination Wye Strainer and Shut Off Valve with one Pressure / Temperature Port, Drain Valve, Tailpiece and Union End.

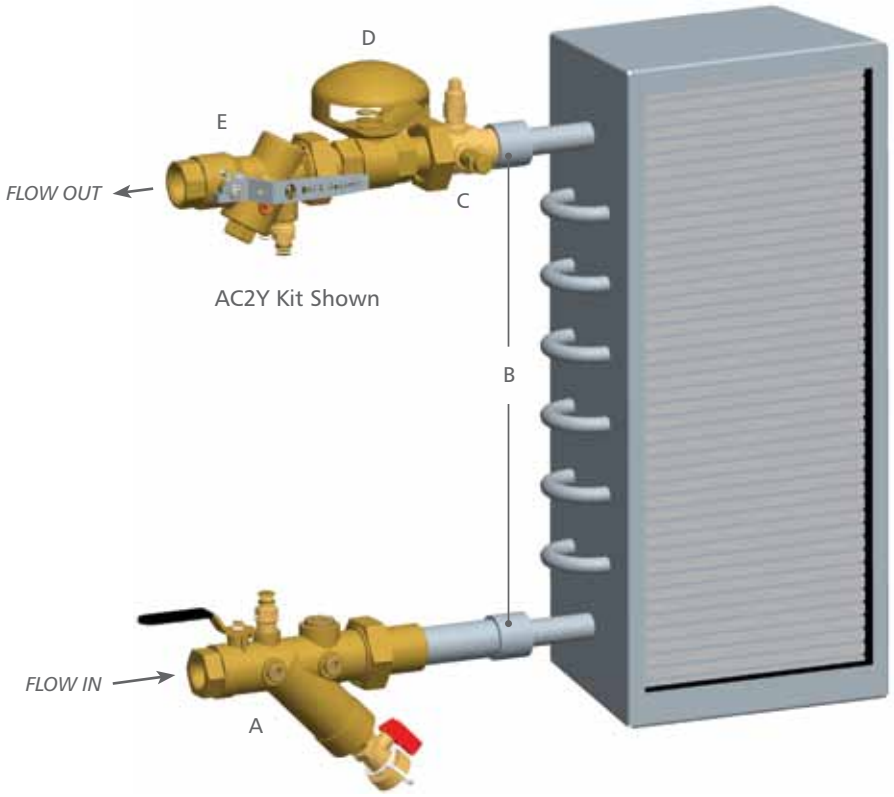
B – Connection for Coil/Terminal

C – Model UA - Union Accessory with one Pressure / Temperature Port, Manual Air Vent, Tailpiece and Union End.

D – Temperature Control Valve (by others)

E – Model AC - Circuit Sentry™ - Automatic Flow Limiting, Commissioning and Shut-Off Valve with two Pressure / Temperature Ports, Tailpiece and Union End.

NOTE: Flexible hose connectors are optional.



AC2Y Kit Shown

Bell & Gossett Hookup Kits Available

Automatic Flow Limiting

- With Strainer (ACY)
- With Union Ball Valve (ACB)
- With 2- or 3-way Control Valve Adaptor and Strainer (AC2Y or AC3Y)
- With 2- or 3-way Control Valve Adaptor and Union Ball Valve (AC2B or AC3B)

Manual Flow Balancing

Using Circuit Setter Plus (MC) or Venturi (MV)

- With Strainer (MCY or MVY)
- With Union Ball Valve (MCB or MVB)
- With 2- or 3-way Control Valve Adaptor and Strainer (MC2Y, MC3Y, MV2Y or MV3Y)
- With 2- or 3-way Control Valve Adaptor and Union Ball Valve (MC2B, MC3B, MV2B or MV3B)

For more information on the Bell & Gossett Circuit Sentry™ Automatic Flow Limiting Valves, contact your ITT HVAC representative.

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