

FlowCon SME

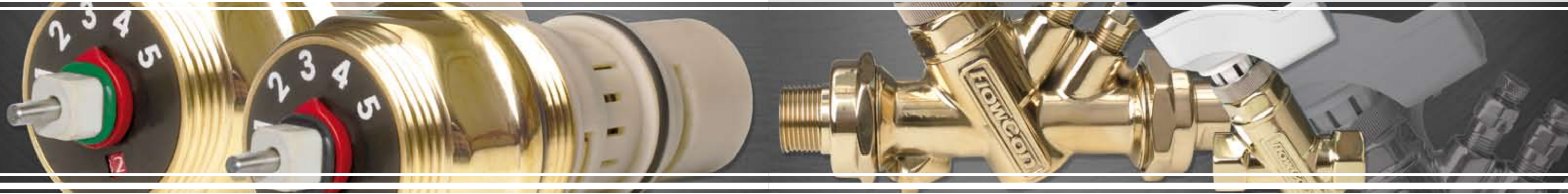


*100% Authority.
Pressure Independent Temperature Control
and Automatic Balancing*

FLOW

FlowCon SME

Pressure Independent Temperature Control and Dynamic Balancing



The FlowCon SME Cartridge is designed as a 2-in-1 solution combining a full stroke modulation control valve with an automatic balancing valve being differential pressure independent. This new cartridge includes an innovative self-adjustment feature which enables each valve continuously to self-balance. This ensures delivery of precisely the flow rate required by each terminal unit, independent of pressure fluctuations in the hydronic system. Each FlowCon SME Cartridge can also be adjusted to set an accurate maximum flow rate limit to each circuit.

The FlowCon SME Cartridge can be used in several different applications within heating or cooling such as fan-coil units, air-handler units and other terminal unit - wherever dynamic balancing and fully accurate temperature control is required, the SME Cartridge will be the ideal choice. It will be the easy solution to both designers, installers and end-users due to its user-friendly complete solution in one body and with one cartridge.

Applications

The SME cartridges can be used with the following FlowCon valves:

- FlowCon A (DN15/20)
- FlowCon AB (DN15/20)
- FlowCon ABV1 (DN15/20/25)

100% Valve Authority

The FlowCon SME is a 100% authority pressure independent flow control valve which instantaneously self-balance at all points of operation, even when there is variance in pressure differential.

100% authority pressure independent

As long as the pressure differential across the valve is within the operating range, the Kv of the valve is variable, being continuously regulated to keep the control valve in constant authority. The SME Cartridge will in other words always use full stroke of the spindle offering the 100% authority for any of its 39 maximum flow settings.

Feature and Benefits

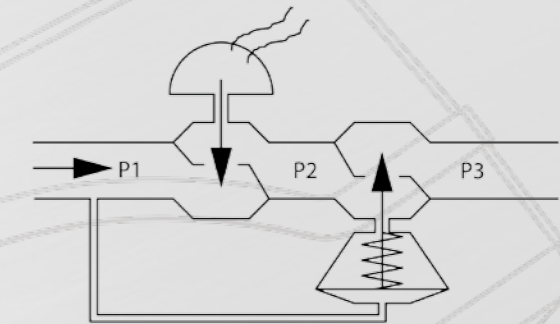
- **2-in-1 combi valve**, modulating control valve and dynamic flow limiter in one body.
- **Differential pressure independent**.
- **Full stroke modulation** at any time guaranteeing **100% authority** for any of the cartridge's flow setting.
- **Automatic balancing**, the correct flow rate for each circuit is achieved automatically.
- **Dynamic balancing**, the correctly flow rate is maintained as each valve compensates for pressure fluctuations in the system.
- **Field adjustable**, flow rate can be changed on demand without removing the cartridge from the valve body.
- **Elimination of branch or "partner" balancing valves** which results in fewer total valves used in each project.
- **Easily accessible cartridge** for flow rate adjustment or maintenance.

- **Accuracy:** Greatest of either $\pm 10\%$ of controlled flow rate or $\pm 2\%$ of maximum flow rate.
- **Up to 39 different flow curves** in one and the same cartridge.
- **Choice of actuator**, electrical actuator 0-10V modulating or 3-point-floating 24V or 230V, normally closed.
- **Built-in isolation ball valve** (FlowCon ABV).
- **Pressure / temperature measurement plugs** available for verifying operating differential pressure or checking ΔT across the coil (FlowCon AB / ABV).
- **Double union end connection** for ease of installation and wide selection of end fittings (FlowCon ABV) or Fixed end female-by-female threaded (FlowCon A / AB).

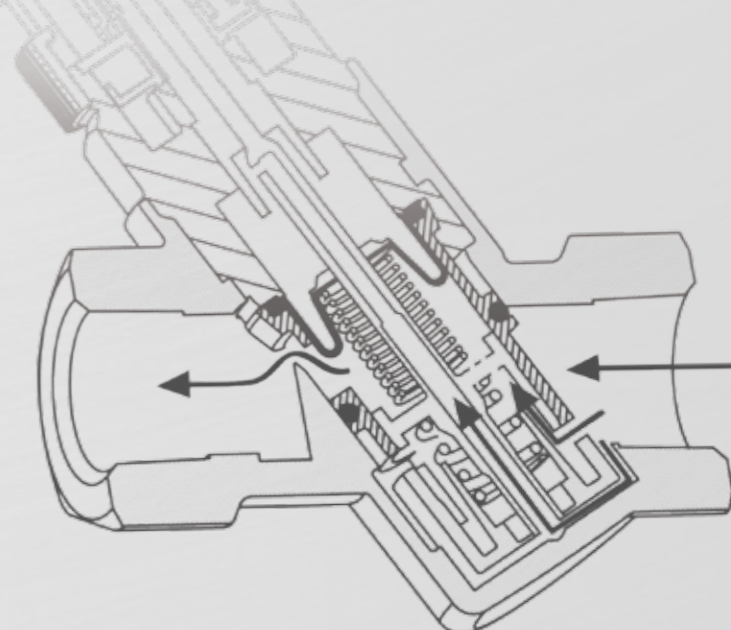
Principle of Operation

On closer examination of the inner workings of the FlowCon SME, the function is best described as 2 valves in 1. The first valve regulates the pressure differential across the second valve by means of a rolling diaphragm element counteracted by a spring. The second valve is a calibrated variable orifice device adjusted by the actuator (similar to a standard modulating control valve).

The diaphragm reacts to the system and regulates the pressure differential across the actuated control valve orifice to maintain its flow rate.



When pre-setting the maximum flow rate, the inlet orifice is change in size sideways which does not interfere with the length of the stroke. When modulating, the orifice areas are affected by the actuator using the full stroke which results in the fact that the orifice area is changed in size in a vertical movement.



Hydronic Balance

The cartridge can be pre-set to limit the working range of the valve which limits the maximum flow rate through the valve. Consequently, hydronic balance is achieved automatically without the use of additional balancing valves.

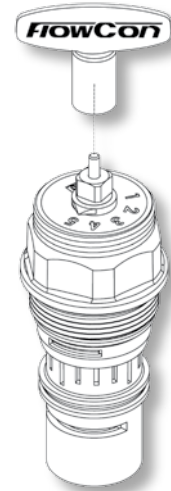
Pre-setting the Maximum Flow Rate

The valve is adjusted to a maximum flow rate limit by setting the scale located on the top of the SME Cartridge. The setting indicates one of maximum 39 possible max. flow rates from e.g. 0.0111-0.234 l/sec but since the setting is step less any flow rate in between will be obtainable. The setting is done by means of a special FlowCon key. With the actuator mounted, the pre-setting is "sealed" and the SME Cartridge eliminates any flow above the design flow.

For re-adjustment, simply re-move power from the actuator and re-move the actuator from the cartridge. Then dial in the new required maximum flow and re-apply the actuator and connect power again.

Actuator Mounting and Self-Calibration

When using the modulation actuator, be sure that power supply is turned off and the actuator is in position 1 (manually turn the actuator to this position if required) before fitting the actuator to the cartridge. After the actuator is fitted and power supply is switched on again, self-calibration will be carried out. During commissioning and every time power is applied, the actuator is designed to perform a self-calibration.



Technical Data

For further information and part number selection please see FlowCon tech note. For latest updates please see www.flowcon.com.

		A/AB/ABV 15/20/25mm
Static Pressure	(kPa)	2500
	(psi)	360
Temperature Rating (media / ambient)	(°C)	+1 to +110 / +1 to +50
	(°F)	+34 to +230 / +34 to +122
Pressure Drop Data		NOTE: For pump head calculations, add the minimum pressure differential for the index circuit to the other components pressure losses (i.e. valves, coil, etc.)
Valve	(Kv-value) (m³/hr)	2.6
	(Cv-value) (GPM)	3.0

SME Cartridge		SME.0 (green o-ring)	SME.1 (black o-ring)
Pressure	(kPaD)	16-200	30-400
Differential	(psid)	2.3-29	4.4-58
Flow Rate	(l/sec)	0.0111-0.234	0.0165-0.334
	(GPM)	0.176-3.72	0.261-5.28



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