FlowCon SM

The world's most advanced control valve

FlowCon international

FlowCon SM

Dynamic Temperature Control Valve

A common problem in hydronic systems is choosing the proper control valve while considering the requirements of acceptable authority. Along with this are the problems of determining the characteristics of the circuit necessary to assess the authority of the control valve.

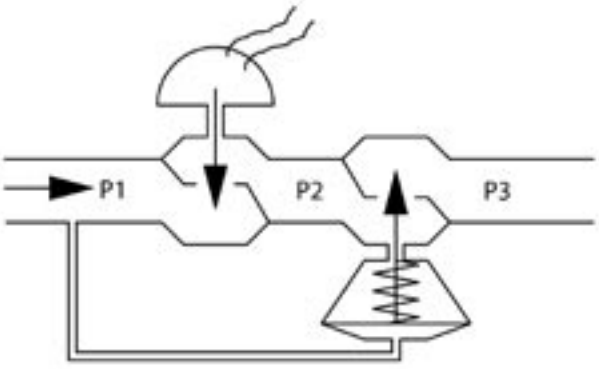
Unstable and inaccurate regulation is often the consequence of over / under sizing a control valve. This is due to the fact that it is impossible to select a traditional control valve with a coefficient which optimally fits the given design parameters. Often the problem is exaggerated by pressure drop fluctuations across the control valve, which occur at varying loads in the system.

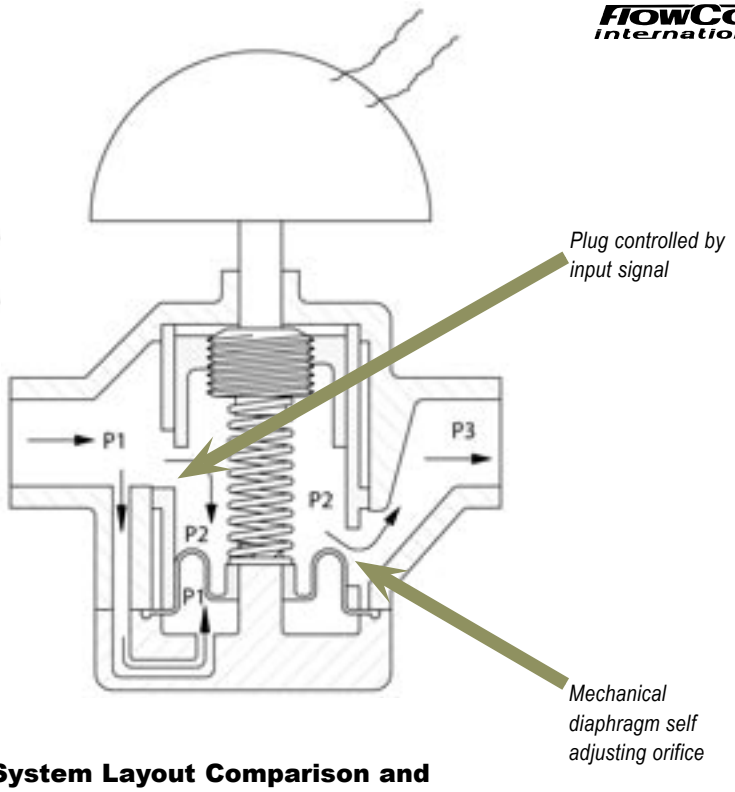
The FlowCon SM valve is a dynamic control valve which means the valve automatically keeps a constant differential pressure across the internal controlling orifice of the valve. Consequently, pressure drop fluctuations across the FlowCon SM will not affect the set flow through the valve. FlowCon SM can be set to limit the maximum design flow, which makes over-sizing control valves obsolete. Extensive calculations and assessments of the authority of the selected valve are eliminated. The dynamic flow characteristics keep the FlowCon SM in constant authority and automatically balanced, eliminating the requirement for a separate balancing valve in the circuit.

FlowCon SM dynamic temperature control valves are designed as an automatic temperature control for coils and AHUs; as a two-way regulation valve in HVAC installation, as radiator heating circuit or in venting heat systems; as a control valve for heat exchangers in heating systems to control floor heating circuits or other secondary heating circuits and as a control valve in hot water tank systems.

It is designed to control the rate of fluid flow to a specific terminal unit or coil. The FlowCon SM 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 SM can also be adjusted to set an accurate maximum flow rate limit to each circuit.

The SM valve series - five different valves covering sizes from 15 mm - 150mm.





Features and Benefits

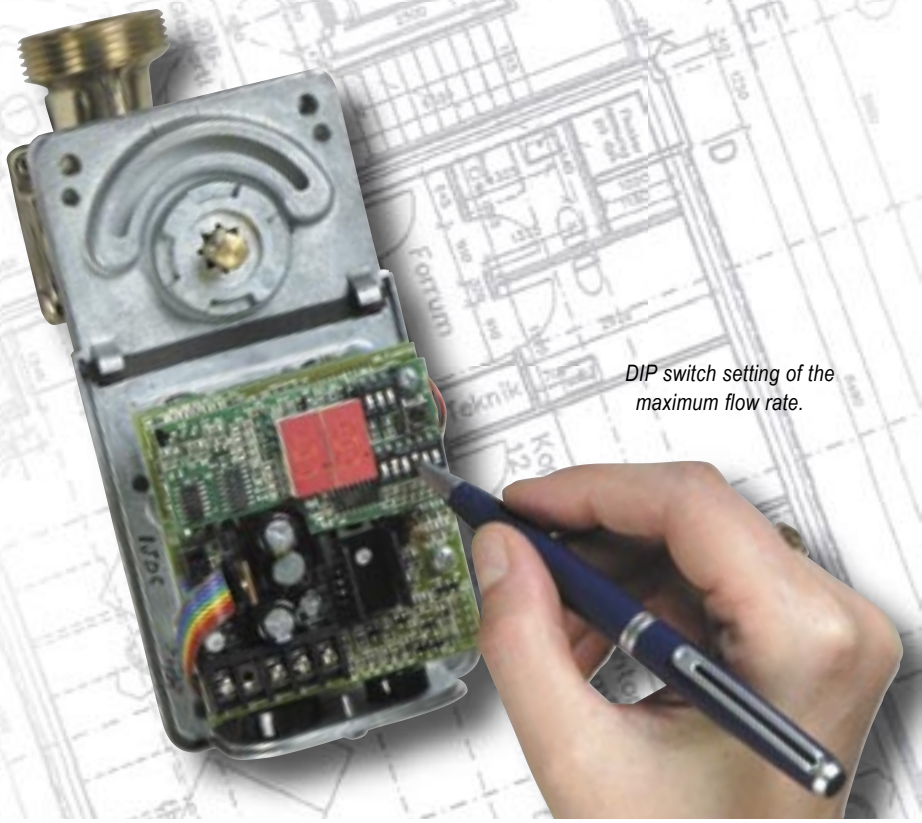
- **Pressure independent flow control.**
- **Total valve authority.**
- **Save time and labor**; installation and adjustment of balancing valves is eliminated.
- **Kv sizing calculations and problems are eliminated**; each valve is adjustable to 51 different maximum flow rate settings.
- **Feedback signal** provides information of actual flow rate, not just a valve position.
- **Optional fail safe power storage feature** opens or closes the valve without an external power supply.
- **LED digital readout** of current and maximum flow rate positions.
- **Actuator** is suitable for proportional modulating or 3-point-floating signals.
- **Pressure / temperature measurement plugs** for verifying operating pressure differential range or checking ΔT across the coil.
- **Union or wafer connection** for ease of installation.

Principle of Operation

On closer examination of the inner workings of the FlowCon SM, 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 counter acted 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.

System Layout Comparison and Valve Authority

The FlowCon SM 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. 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.



DIP switch setting of the maximum flow rate.

Hydronic Balance

The actuator 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.

Control Signals

The control signals, i.e. input signals and feedback automatically adapt to the pre-set working range of the valve. This means the maximum signal is equal to the maximum pre-set design flow limit. The digital control system is allowed to work throughout the full range of the signal independent of the working range. The valve can be programmed to operate either in NC-mode (normally closed) so that the valve opens with an increasing signal or in NO-mode (normally open) so that it closes with an increasing signal.

Pre-setting the Maximum Flow Rate

The valve is adjusted to a maximum flow rate limit by setting the 6 dip switches located inside the actuator. The switches numbered from 1 through 6 can be set to an ON or OFF position. The code combinations to produce each of the 51 possible flow rate maximum per valve are listed in the FlowCon SM technotes.

Actuator Options

Fail-safe function powering the valve to safety position during power failure utilizing a rechargeable battery.

Technical Data

For further information and part number selection pls. see FlowCon technotes.

		SM1 DN15/20/25	SM2 DN25/32/40	SM3 DN50/65/80		SM4 DN80/100		SM5 DN125/150	
Pressure Differential	(kPa)	32-320	40-320	35-400	80-400	35-400	60-400	35-400	60-400
	(psi)	4.6-46	5.8-46	5.1-58	11.6-58	5.1-58	8.7-58	5.1-58	8.7-58
Flow Rate	(l/sec)	0.176-0.685	0.513-2.34	1.48-7.15	3.55-9.88	3.49-9.38	4.73-14.2	6.48-23.3	7.10-29.5
	(GPM)	2.79-10.9	8.14-37.1	23.4-113	56.3-157	55.4-149	75.0-225	103-369	113-468
Static Pressure	(kPa)	2500		4000					
	(psi)	360		580					
Temperature Rating (media / ambient)	(°C)	-20 to +120 / -10 to +54							
	(°F)	-4 to +248 / +14 to +131							

Trafikcenter Allé 17
DK-4200 Slagelse
DENMARK
Phone: +45 5850 5230
Fax: +45 5850 5730
Mail: flowcon@flowcon.dk

FlowCon international

No. 37, Geylang Lorong 23, #04-04
Yu Li Industrial Building
SINGAPORE 388371
Phone: +65 6841 8849
Fax: +65 6841 8843
Mail: flowcon1@singnet.com.sg