

# FlowCon Green.3



*100% Authority  
Pressure Independent Control Valve*

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## Pressure Independent Control Valve



The FlowCon Green.3 valve is a modern Pressure Independent Control Valve (PICV) meeting today's HVAC requirements of reducing the building operational costs without increasing the initial installation costs. This Green.3 valve is - given the precise flow control capabilities in combination with the low differential pressure required to operate the valve - an essential partner in the strive to reduce HVAC operational cost and thereby reduce the energy consumption and CO<sub>2</sub> emission.

The valve includes an innovative self-adjustment feature allowing continuous mechanical self-balancing in all valve positions. This ensures that each thermal unit controlled by the Green.3 valve is always supplied with the exact flow required for the specific system condition. The valve is furthermore constructed in such a way that the valve stroke is unaltered regardless which of the 41 available pre-set values that are selected.

The valve is designed to facilitate large fan coils, smaller air handling units, smaller heat exchangers or equivalent, but it is generally the optimal choice in all applications where efficient distribution of water - with focus on system pressure drop - is required. The low pressure drop and feedback options make the valve ideal for Green Buildings also.

### Valve Choice

The FlowCon Green.3 valves are available in 2 versions:

- 40mm (1 1/2") female/female threaded connection
- 50mm (2") female/female threaded connection

### 100% Valve Authority

The FlowCon Green.3 is a true Pressure Independent Control Valve holding 100% authority at all times. The valve 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 (Cv) of the valve is variable and continuously regulated mechanically to keep the control valve in constant authority. The FlowCon Green.3 valve will in other words always utilize full stroke of the spindle offering 100% authority for any of its 41 maximum flow settings and any flow below requested by the building controls through the valve actuator.

### Features and Benefits

- **3-in-1 combi valve**, modulating control valve, dynamic flow limiter and differential pressure control valve in one body.
- **Differential pressure independent**.
- **Full stroke modulation** at any design flow.
- **100% authority** for any of the valve's maximum flow setting.
- **Automatic system balancing**, the correct flow rate for each circuit is achieved automatically.
- **Dynamic balancing**, the correct flow rate is maintained as each valve continuously compensates for pressure fluctuations in the system.
- **Field adjustable**, flow rate can be changed on demand to 41 predefined maximum flow rates without removing the valve from the pipe works.
- **Elimination of branch or "partner" balancing valves** resulting in fewer total valves used in each project.
- **A compact one-unit PICV** (housing and regulator are combined).
- **Accuracy**: Greatest of either  $\pm 10\%$  of controlled flow rate or  $\pm 5\%$  of maximum flow rate.
- **Up to 41 different flow curves** in one and the same valve.
- **Choice of actuator** 0(2)-10V modulating, 3-point floating or 2-position - actuators feature position indicator and feedback signals for BMS monitoring.
- **Pressure/temperature measurement plugs** for verifying operating differential pressure or checking  $\Delta T$  across the coil.
- **Stepless adjustment**.





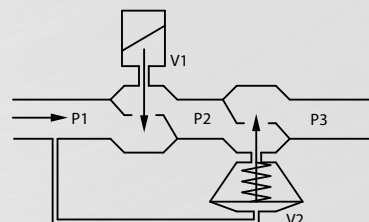
FlowCon Green.3				Setting
DN40-50 , 1 1/2"-2"				
16-400 kPad · 2.3-58 psid				
Nominal flow rate	l/sec	l/hr	GPM	
	0.528	1900	8.36	1.0
	0.633	2278	10.0	1.1
	0.738	2655	11.7	1.2
	0.843	3033	13.3	1.3
	0.947	3410	15.0	1.4
	1.05	3787	16.7	1.5
	1.16	4163	18.3	1.6
	1.26	4537	20.0	1.7
	1.36	4909	21.6	1.8
	1.47	5279	23.2	1.9
	1.57	5646	24.8	2.0
	1.67	6011	26.4	2.1
	1.77	6372	28.0	2.2
	1.87	6730	29.6	2.3
	1.97	7083	31.2	2.4
	2.06	7432	32.7	2.5
	2.16	7776	34.2	2.6
	2.25	8115	35.7	2.7
	2.35	8449	37.2	2.8
	2.44	8777	38.6	2.9
	2.53	9098	40.0	3.0
	2.61	9413	41.4	3.1
	2.70	9721	42.8	3.2
	2.78	10021	44.1	3.3
	2.86	10314	45.4	3.4
	2.94	10599	46.6	3.5
	3.02	10875	47.8	3.6
	3.10	11142	49.0	3.7
	3.17	11400	50.2	3.8
	3.24	11649	51.3	3.9
	3.30	11888	52.3	4.0
	3.37	12116	53.3	4.1
	3.43	12334	54.3	4.2
	3.48	12540	55.2	4.3
	3.54	12735	56.0	4.4
	3.59	12919	56.8	4.5
	3.64	13090	57.6	4.6
	3.68	13249	58.3	4.7
	3.72	13395	58.9	4.8
	3.76	13527	59.5	4.9
	3.79	13647	60.0	5.0

Accuracy: Greatest of either  $\pm 10\%$  of controlled flow rate or  $\pm 5\%$  of maximum flow rate.

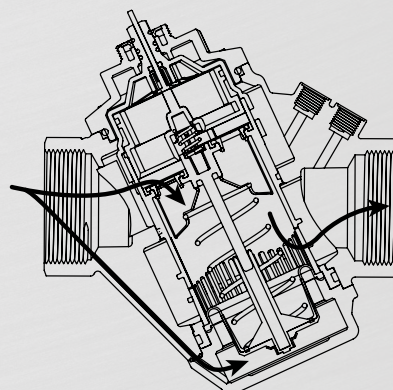
### Principle of Operation

On closer examination of the inner workings of the FlowCon Green, the function is best described as 2 valves in 1. The second valve (V2) regulates the pressure differential across the first valve (V1) by means of a rolling diaphragm element counteracted by a spring. The first 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 changed 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

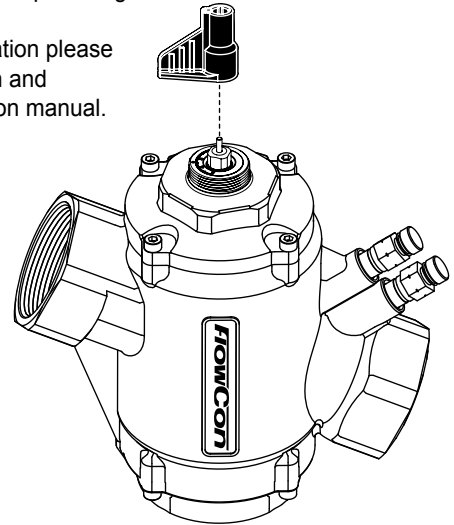
The valve can be pre-set to limit the maximum flow rate through the valve, without restricting the valve stroke. Consequently, hydronic balance is achieved automatically without usage of additional balancing valves.

### 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 FlowCon Green.3 valve. The setting indicates one of 41 possible predefined maximum flow rates from 0.528-3.79 l/sec (8.36-60.0 GPM), but since the setting is stepless 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 avoid tampering. After setting, the FlowCon Green.3 valve will eliminate any flow above the design flow.

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

For further information please see the installation and operation instruction manual.



### Technical Data

For further information and part number selection please see FlowCon tech note.

For latest updates please see [www.flowcon.com](http://www.flowcon.com).

		FlowCon Green.3
Static Pressure	(kPa)	2500
	(psi)	360
Temperature Rating (media / ambient)	(°C)	-20 to +120 / +1 to +50
	(°F)	-4 to +248 / +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.)
Complete Unit	(Kvs-value)	34.1
	(Cvs-value)	39.6
Pressure Differential	(kPaD)	16-400
	(psid)	2.3-58
Flow Rate	(l/sec)	0.528-3.79
	(GPM)	8.36-60.0

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