

FlowCon Green



*100% Authority
Pressure Independent Control Valve*

FlowCon Green

Pressure Independent Control Valves



The FlowCon Green insert is designed as a 3-in-1 solution combining a full stroke modulation control valve, an automatic balancing valve and a differential pressure control valve. This new insert 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 Green insert can also be adjusted to set an accurate maximum flow rate limit to each circuit without stroke limitation.

The FlowCon Green insert can be used in several different applications within heating or cooling such as fan-coil units, air-handler units and other terminal units - wherever dynamic balancing and fully accurate temperature control are required, the FlowCon Green insert 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 insert.

Valve Choice

The FlowCon Green insert can be used with the following FlowCon valves:

- FlowCon A (DN15/20/25)
- FlowCon AB (DN15/20/25/32)
- FlowCon ABV1 (DN15/20/25)
- FlowCon ABV2 (DN25/32/40)

100% Valve Authority

The FlowCon Green 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 FlowCon Green insert will in other words always use full stroke of the spindle offering the 100% authority for any of its 41 maximum flow settings.

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 desing flow.
- **100% authority** for any of the insert's 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 without removing the insert from the valve body.
- **Elimination of branch or "partner" balancing valves** which results in fewer total valves used in each project.
- **Easily accessible insert** for flow rate adjustment or maintenance.
- **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 insert.
- **Choice of actuator**, electrical actuators: 0(2)-10V modulating, 3-point floating or 2-position, or thermal actuators: 0-10V modulating or ON/OFF.
- **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).



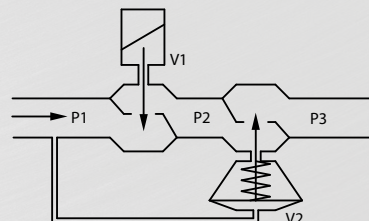
| FlowCon Green | | | | | | | | | | |
|--------------------|---------------------------|------|-------|---------------------------|------|-----------------------|-----------------------------|------|------|---------|
| Insert: 20mm, 3/4" | | | | | | Insert: 40mm , 1 1/2" | | | | |
| Nominal flow rate | 16-200 kPaD · 2.3-29 psid | | | 30-400 kPaD · 4.4-58 psid | | | 16-400 kPaD* · 2.3-58 psid* | | | Setting |
| | Green.0 (grey o-ring) | | | Green.1 (black o-ring) | | | Green.2 (black o-ring) | | | |
| | l/sec | l/hr | GPM | l/sec | l/hr | GPM | l/sec | l/hr | GPM | |
| | - | - | - | 0.0178 | 64 | 0.282 | 0.240 | 865 | 3.81 | 1.0 |
| | 0.0103 | 37 | 0.163 | 0.0393 | 142 | 0.624 | 0.282 | 1010 | 4.46 | 1.1 |
| | 0.0233 | 84 | 0.370 | 0.0580 | 209 | 0.920 | 0.322 | 1160 | 5.10 | 1.2 |
| | 0.0322 | 116 | 0.510 | 0.0743 | 268 | 1.180 | 0.361 | 1300 | 5.72 | 1.3 |
| | 0.0419 | 151 | 0.664 | 0.0887 | 319 | 1.41 | 0.399 | 1430 | 6.32 | 1.4 |
| | 0.0500 | 180 | 0.792 | 0.102 | 366 | 1.61 | 0.435 | 1570 | 6.90 | 1.5 |
| | 0.0569 | 205 | 0.902 | 0.113 | 408 | 1.80 | 0.471 | 1700 | 7.47 | 1.6 |
| | 0.0650 | 234 | 1.03 | 0.124 | 446 | 1.96 | 0.506 | 1820 | 8.02 | 1.7 |
| | 0.0719 | 259 | 1.14 | 0.134 | 482 | 2.12 | 0.540 | 1940 | 8.56 | 1.8 |
| | 0.0781 | 281 | 1.24 | 0.143 | 516 | 2.27 | 0.573 | 2060 | 9.08 | 1.9 |
| | 0.0839 | 302 | 1.33 | 0.152 | 549 | 2.42 | 0.605 | 2180 | 9.59 | 2.0 |
| | 0.0889 | 320 | 1.41 | 0.161 | 580 | 2.56 | 0.636 | 2290 | 10.1 | 2.1 |
| | 0.0942 | 339 | 1.49 | 0.170 | 611 | 2.69 | 0.667 | 2400 | 10.6 | 2.2 |
| | 0.0981 | 353 | 1.55 | 0.178 | 641 | 2.82 | 0.696 | 2510 | 11.0 | 2.3 |
| | 0.103 | 371 | 1.63 | 0.186 | 671 | 2.95 | 0.725 | 2610 | 11.5 | 2.4 |
| | 0.106 | 381 | 1.68 | 0.194 | 700 | 3.08 | 0.753 | 2710 | 11.9 | 2.5 |
| | 0.109 | 394 | 1.73 | 0.202 | 728 | 3.21 | 0.780 | 2810 | 12.4 | 2.6 |
| | 0.113 | 406 | 1.79 | 0.210 | 756 | 3.33 | 0.807 | 2900 | 12.8 | 2.7 |
| | 0.115 | 414 | 1.82 | 0.218 | 783 | 3.45 | 0.832 | 3000 | 13.2 | 2.8 |
| | 0.119 | 428 | 1.88 | 0.225 | 810 | 3.56 | 0.858 | 3090 | 13.6 | 2.9 |
| | 0.122 | 439 | 1.93 | 0.232 | 835 | 3.68 | 0.882 | 3180 | 14.0 | 3.0 |
| | 0.125 | 449 | 1.98 | 0.239 | 860 | 3.79 | 0.906 | 3260 | 14.4 | 3.1 |
| 0.127 | 458 | 2.02 | 0.245 | 883 | 3.89 | 0.930 | 3350 | 14.7 | 3.2 | |
| 0.130 | 468 | 2.06 | 0.252 | 906 | 3.99 | 0.953 | 3430 | 15.1 | 3.3 | |
| 0.133 | 477 | 2.10 | 0.257 | 927 | 4.08 | 0.975 | 3510 | 15.5 | 3.4 | |
| 0.135 | 486 | 2.14 | 0.263 | 946 | 4.17 | 0.997 | 3590 | 15.8 | 3.5 | |
| 0.137 | 494 | 2.17 | 0.268 | 965 | 4.25 | 1.02 | 3670 | 16.1 | 3.6 | |
| 0.140 | 503 | 2.21 | 0.273 | 982 | 4.32 | 1.04 | 3740 | 16.5 | 3.7 | |
| 0.142 | 511 | 2.25 | 0.277 | 998 | 4.39 | 1.06 | 3820 | 16.8 | 3.8 | |
| 0.144 | 518 | 2.28 | 0.281 | 1010 | 4.46 | 1.08 | 3890 | 17.1 | 3.9 | |
| 0.146 | 526 | 2.31 | 0.285 | 1020 | 4.51 | 1.10 | 3960 | 17.4 | 4.0 | |
| 0.148 | 532 | 2.34 | 0.288 | 1040 | 4.57 | 1.12 | 4030 | 17.7 | 4.1 | |
| 0.149 | 538 | 2.37 | 0.291 | 1050 | 4.61 | 1.14 | 4100 | 18.1 | 4.2 | |
| 0.151 | 544 | 2.39 | 0.294 | 1060 | 4.66 | 1.16 | 4170 | 18.4 | 4.3 | |
| 0.153 | 549 | 2.42 | 0.296 | 1070 | 4.70 | 1.18 | 4240 | 18.7 | 4.4 | |
| 0.154 | 553 | 2.43 | 0.299 | 1080 | 4.73 | 1.20 | 4300 | 19.0 | 4.5 | |
| 0.155 | 559 | 2.46 | 0.301 | 1080 | 4.77 | 1.21 | 4370 | 19.2 | 4.6 | |
| 0.156 | 563 | 2.48 | 0.303 | 1090 | 4.80 | 1.23 | 4440 | 19.5 | 4.7 | |
| 0.158 | 567 | 2.50 | 0.305 | 1100 | 4.83 | 1.25 | 4500 | 19.8 | 4.8 | |
| 0.159 | 571 | 2.51 | 0.307 | 1100 | 4.86 | 1.27 | 4570 | 20.1 | 4.9 | |
| 0.160 | 575 | 2.53 | 0.308 | 1110 | 4.89 | 1.29 | 4630 | 20.4 | 5.0 | |

Accuracy: Greatest of either $\pm 10\%$ of controlled flow rate or $\pm 5\%$ of maximum flow rate.
 *at setting 2.6.

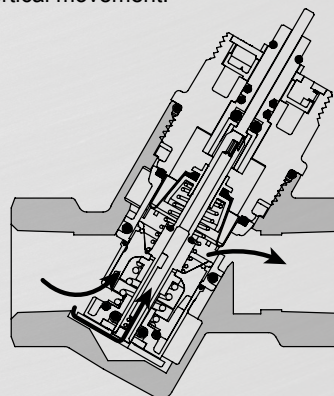
Principle of Operation

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 insert 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

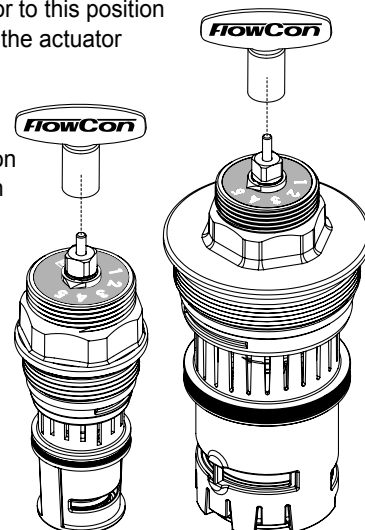
The valve is adjusted to a maximum flow rate limit by setting the scale located on the top of the FlowCon Green insert. The setting indicates one of 41 possible maximum flow rates from e.g. 0.240-1.29 l/sec on FlowCon Green.2 but since the setting is stepless any flow rate in between will be obtainable. The setting is done by means of a special FlowCon key. With the actuator mounted, the pre-setting is "sealed" and the FlowCon Green insert eliminates any flow above the design flow.

For re-adjustment, simply disconnect power from the actuator and re-move the actuator from the insert. 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 actuator, always be sure that power supply is turned off and the actuator is in a fully open position (turn the actuator to this position if required) before fitting the actuator to the insert.

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.

| | | A/AB/ABV DN15/20/25 with Green insert | AB DN25/32 with Green insert ABV DN25/32/40 with Green insert |
|---|--------------------|---|--|
| Static Pressure | (kPa) | 2500 | 2500 |
| | (psi) | 360 | 360 |
| Temperature Rating (media / ambient) | (°C) | -20 to +120 / +1 to +50 | -20 to +120 / +1 to +50 |
| | (°F) | -4 to +248 / +34 to +122 | -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.) | |
| Valve Body | (Kv-value) (m³/hr) | 3.1 | 12.5 |
| | (Cv-value) (GPM) | 3.6 | 14.5 |

| FlowCon Green insert | | Green.0 (grey o-ring) | Green.1 (black o-ring) | Green.2 (black o-ring) |
|-----------------------|---------|-----------------------|------------------------|-------------------------|
| Pressure Differential | (kPaD) | 16-200 | 30-400 | 16-400 (at setting 2.6) |
| | (psid) | 2.3-29 | 4.4-58 | 2.3-58 (at setting 2.6) |
| Flow Rate | (l/sec) | 0.0103-0.160 | 0.0178-0.308 | 0.240-1.29 |
| | (GPM) | 0.163-2.53 | 0.282-4.89 | 3.81-20.4 |

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