FlowCon international

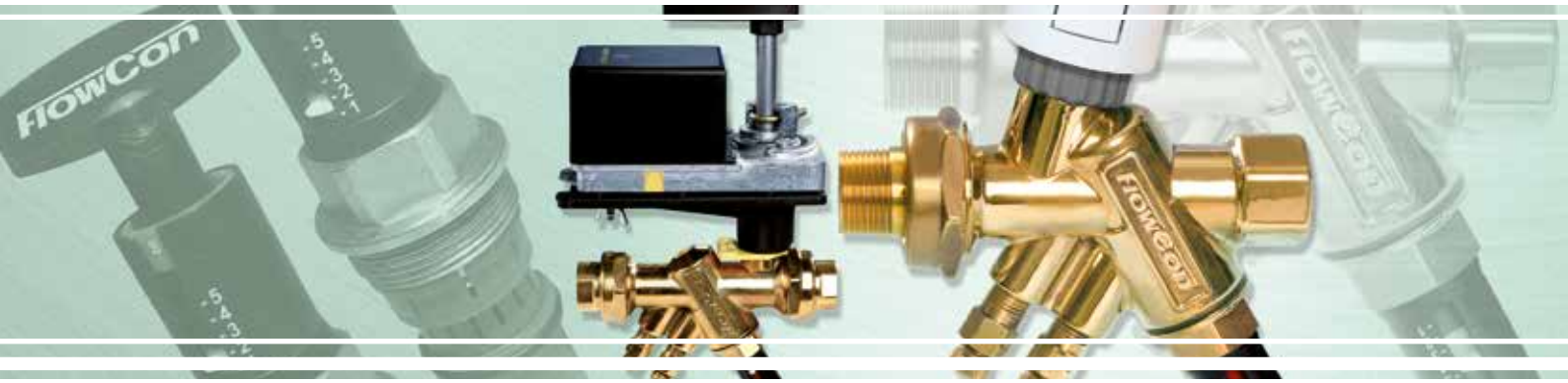
A Griswold Controls LLC./FlowCon International Company

# FlowCon EVS / EVC / ABM


*Balanced Temperature Control Valves*

# FlowCon EVS, EVC and ABM

*Temperature Control and Automatic Balancing combined in a Single Unit for Total Flow Control*




The FlowCon EVS and EVC valves are particularly designed to give the optimal indoor comfort. The valves will provide ON/OFF or analog temperature control and self balancing flow control for use with fan coil units in air-conditioning and cooling ceilings or as zone valve in heating systems.

For larger applications the “sister model” FlowCon ABM can be used. The ABM valve is suitable for applications in connection with building automation systems where central control of the comfort in the building is required. This model combines an electrically actuated ball valve in series with an automatic flow limiting insert.

The flow regulator is different within the three types, i.e. FlowCon EVS is regulated by a stainless steel insert and the FlowCon EVC and ABM by an adjustable composite insert.

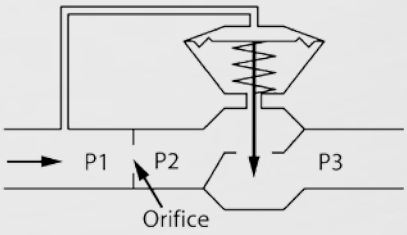
The EVS-insert is designed for use in connection with the valve bodies FlowCon A, AB or ABV1. The EVC valve has its own unique valve house. The ABM valve is designed for use with the FlowCon ABV-bodies with modification to the ball valve. The control signal for either actuator can be provided by for instance a thermostat.

**Features and Benefits**

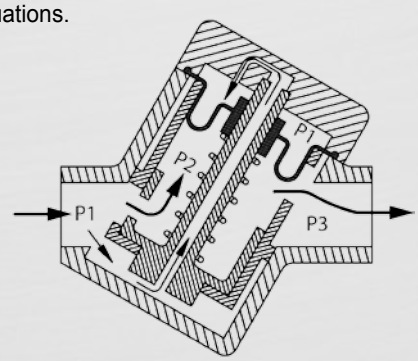
- **Automatic balancing**, the correct flow rate for each circuit is achieved automatically.
- **Dynamic balancing**, the correct flow rate is maintained as each valve compensates for pressure fluctuations in the system.
- **Actuator** selection, ON/OFF or analog, normally closed.
- **Easily accessible insert** for flow rate adjustment or maintenance.
- **Pressure/temperature measurement plugs** for verifying operating pressure differential range or checking ΔT across the coil (not available on FlowCon A-bodies).
- **Union end connection** for ease of installation and wide selection of end fittings (FlowCon ABV, EVC and ABM) or **fixed female threaded ends** (FlowCon A and AB).

**Principle of Insert Operation**
**- FlowCon EVC and ABM**

The FlowCon EVC and ABM valves utilize an adjustable composite insert. The internal adjustable insert is adjusted by means of a 6mm Hex key to one of 8 different flow rates. The external adjustable insert, called the FlowCon E-JUST, is operated by means of a special FlowCon key, and flow rate is chosen from 41 different possibilities.




For the FlowCon EVC and ABM, the principle of operation is shown above and the principle of construction is shown below. P1 and P3 are system pressures, P1÷P3 is the total pressure drop across the valve. P2 is set by the diaphragm acting in reaction to P1 in the upper diaphragm chamber. Interacting with the spring, P1÷P2 remains constant, keeping a constant ΔP across the orifice areas. The result is a constant flow rate through the valve, independent of pressure fluctuations.

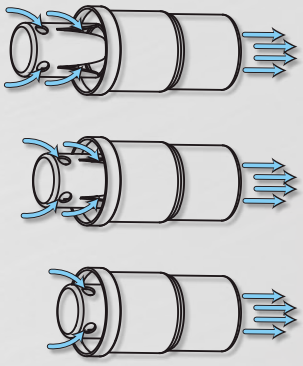



Below its pressure differential range, the valve acts as a fixed orifice. This allows the temperature control part of the valve to operate with valve authority up to the set flow rate maximum.

In case the differential pressure is higher than the defined max. ΔP for the insert, the diaphragm may be damaged.

**Principle of Insert Operation**
**- FlowCon EVS**

The FlowCon EVS valve utilizes a factory pre-set stainless steel insert. Below its pressure differential range it acts as a fixed orifice.



Within operating pressure differential range, the effective open orifice area of the insert is automatically adjusted to the point where the specified flow rate will be delivered (as the pressure differential increases, the open area closes and as it decreases, the area opens).

When the pressure differential range is exceeded, the valve again becomes a fixed orifice device. This ensures that no part of the system is starved or shut down.

## Equal Percentage Control Characteristic

The patented parabolic Optimizer® in the FlowCon ABM is unique from any other in the industry because it is actually press-fitted into the ball, resulting in less wear and higher close-off pressure. Optimizer® means equal percentage flow characteristic and linear heat transfer, i.e. the heat output at the coil is linear when compared to the open area of the valve.

The physical design of the Optimizer® means that once it is press-fitted into the ball, it cannot be forced out because the back side of the Optimizer® is too large to be forced through the ball's port.

As pressure increases behind the Optimizer® insert, it compresses even further into the ball's port, making a tight fit even tighter for guaranteed protection against leak-by.

The Optimizer® is able to modulate in systems where the differential pressure is over 1100 kPaD without influencing life or performance of the Optimizer®, which is quite unique compared with other similar solutions.

*Illustration of Optimizer® movement.*

## Technical Data

For further information and part number selection pls. see FlowCon tech note and the catalogue: FlowCon Inserts.
For latest updates please see ***www.flowcon.com***

| | | A/AB/ABV DN15/20/25 with EVS insert | EVC DN15/20/25 | ABM DN15/20/25 | ABM DN25/32/40 |
|---|---|---|---|---|---|
| Static Pressure | (kPa) | 2500 | 1600 | 2500 | 2500 |
| | (psi) | 360 | 230 | 360 | 360 |
| Temperature Rating Media/Ambient | (°C) | -20 to +120 / 0 to +60 | -20 to +120 / 0 to +60 | -20 to +120 / 0 to +50 | -20 to +120 / 0 to +50 |
| | (°F) | -4 to +248 / 32+ to +140 | -4 to +248 / 32+ to +140 | -4 to +248 / +32 to +122 | -4 to +248 / +32 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 | 3.1 | 2.00 | Depend on Optimizer® | Depend on Optimizer® |
| | Cv-value | 3.6 | 2.33 | | |

| Stainless Steel Insert | | F3601XX | F3602XX | F3604XX | | |
|---|---|---|---|---|---|---|
| Insert Size | (mm) | 20 | 20 | 20 | Available with an adapter | Available with an adapter |
| | (inch) | 3/4 | 3/4 | 3/4 | | |
| Pressure Differential | (kPaD) | 10-95 | 22-210 | 40-390 | | |
| | (psid) | 1-14 | 2-32 | 4-57 | | |
| Flow Rate | (l/sec) | 0.0210-0.315 | 0.0347-0.505 | 0.0473-0.631 | | |
| | (GPM) | 0.333-5.00 | 0.550-8.00 | 0.750-10.0 | | |

| Standard Composite Cart. | | | ABV1.Y.X[1] grey/red/blue/black/green | ABV1.G.X[1] grey/red/blue/black/green | ABV2.X.X red/white | ABV2.C.X red/white | ABV2.D.X red/white |
|---|---|---|---|---|---|---|---|
| Insert Size | (mm) | N/A | 20 | 20 | 40 | 40 | 40 |
| | (inch) | | 3/4 | 3/4 | 1 1/2 | 1 1/2 | 1 1/2 |
| Pressure Differential | (kPaD) | | 15-130 | 30-400 | 15-130 | 22-300 | 30-410 |
| | (psid) | | 2.2-18.9 | 4.4-58 | 2.2-18.9 | 3.2-43.5 | 4.4-59.5 |
| Flow Rate | (l/sec) | | 0.0081-0.273 | 0.0117-0.408 | 0.17-0.85 | 0.23-1.21 | 0.27-1.43 |
| | (GPM) | | 0.13-4.33 | 0.185-6.46 | 2.69-13.5 | 3.65-19.2 | 4.28-22.7 |

| E-JUST Insert | | | E-JUST1.Y.X[1] black/green | E-JUST1.Y.R[1] red | E-JUST1.G.R[1] red | E-JUST1.G.X[1] black/green | E-JUST2.Y.G green |
|---|---|---|---|---|---|---|---|
| Insert Size | (mm) | N/A | 20 | 20 | 20 | 20 | 40 |
| | (inch) | | 3/4 | 3/4 | 3/4 | 3/4 | 1 1/2 |
| Pressure Differential | (kPaD) | | 17-210 | 17-200 | 30-400 | 35-400 | 17-400 |
| | (psid) | | 2.5-30 | 2.5-29 | 4.4-58 | 5.1-58 | 2.5-58 |
| Flow Rate | (l/sec) | | 0.0278-0.169 | 0.0767-0.229 | 0.113-0.352 | 0.0383-0.249 | 0.149-1.62 |
| | (GPM) | | 0.44-2.68 | 1.22-3.60 | 1.79-5.57 | 0.61-3.94 | 2.36-25.7 |

Note 1: Standard composite insert type Y and G and E-JUST insert type Y and G are to be used in either EVC DN15/20/25 or in ABM DN15/20/25.