



## Flow control and pressure reducing automatic valve Mod. XLC 331/431

The CSA model XLC 331/431 is a globe pattern hydraulically operated automatic control valve that reduces and stabilizes the downstream pressure to a constant set-point, regardless of variation in demands, limiting at the same time the flow rate to a maximum value. Normally equipped with visual position indicator and made in ductile cast iron with FBT (fluid bed technology) epoxy coating and stainless steel, the valve reduces head loss, throttling noise and cavitation damage. The valve is supplied with an orifice plate assembly, needed for the proper functioning and connected to the pilot.

### Applications

- Downstream of pumps to reduce the pressure and prevent overload.
- As a protection against rise in pressure of industrial equipment, plants and civil installations, limiting the flow to prioritize high zones consumers.
- In filtration systems to prevent excessive flow and unwanted rise in pressure avoiding damages and malfunctioning.

### Accessories

- Linear position transmitter with 4-20 mA output Mod. CSA CSPL.
- On-off position transmitter Mod. CSA CSPO.
- Pressure measurement kit.
- Self-flushing and high capacity filter.

### Note to the engineer

- Inlet and outlet pressure, flow rate are required for the proper sizing.
- CSA anti-cavitation low flow stability plugs are recommended to provide an accurate regulation in case of low flow conditions.
- For the best accuracy leave 5 DN between the valve and the orifice plate and 3 DN downstream of it (picture in the next page).

### Additional features

- XLC 331/431-FR pressure reduction and flow control valve with back-flow prevention.
- XLC 331/431-H pressure reduction and flow control valve with high sensitivity pilot.
- XLC 331/431-5 pressure reduction and flow control valve with solenoid control.

### Working conditions

- Fluid: treated water.
- Minimum operating pressure: 1,5 bar.
- Maximum operating pressure: 16 bar. Higher on request.
- Maximum temperature: 70°C.

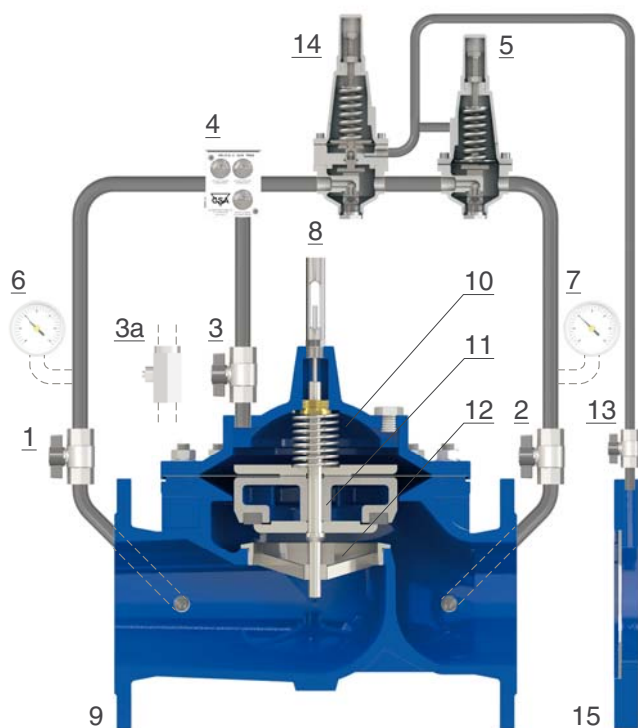
### Downstream pressure pilot adjustment range

- Red spring: 1,5 to 15 bar.

### Flow rate control pilot adjustment range

- The orifice plate assembly is calculated and machined according to the maximum flow rate. An adjustment range of the value is possible according to the regulation flow chart supplied with the valve.

## Operating principle



The CSA model XLC 331/431 is operated by two ways pilots (14-5), namely for pressure reduction and flow control, with pre-set and adjustable values. The downstream pressure is sensed after the orifice plate assembly (15). Should the downstream pressure rise above the pilot (14) set-point the latter will throttle and limit the flow to direct inlet pressure to the main chamber (10), to reduce and stabilize the downstream pressure to a constant value. Should the downstream pressure fall below the pilot set-point the obturator (11) will raise, to reduce the head loss followed by the rise in pressure. The flow rate control pilot (5) receives the downstream pressure on the cover where the spring is adjusted to compensate the difference in pressure produced by the orifice plate assembly. Should the flow exceed the maximum value the pilot (5) will throttle and limit the flow to direct inlet pressure to the main chamber (10), to generate the head loss required for flow control. The CSA regulation device with filter called GR.I.F.O. (4) guarantees the valve's response time and accuracy.

## Installation layout

The installation lay-out of the CSA XLC 331/431 includes sectioning devices (1, 2) and by-pass, with CSA direct acting pressure control valves (4), very important for maintenance operations. The orifice plate assembly (8) needs to be located 5 DN downstream of the valve leaving 3 DN more before any change in direction, slope and cause of turbulence in the fluid. FOX 3F AS (6, 7) are recommended for air release and commissioning as well as pressure relief valve CSA VSM (5) to prevent rise in pressure on the line.

