



## Downstream pressure reducing and upstream pressure sustaining valve Mod. XLC 312/412

The CSA Model XLC 312/412 is a globe pattern hydraulically operated automatic control valve with two independent functions. It sustains the upstream pressure to a minimum and pre-set value regardless of changes in demand, and it prevents at the same time the downstream pressure from rising above a maximum set-point. Both values are adjustable. Normally equipped with visual position indicator and made in ductile cast iron with FBT epoxy coating and stainless steel, the valve is designed to reduce head loss, throttling noise and cavitation damage.

### Applications

- Downstream of pumps to reduce pressure on the supply line and to prevent pump overload.
- To stabilize the pressure of secondary lines and avoid possible depressurization of the main transmission pipe.
- On gravity fed transmission lines to ensure a minimum operating pressure to consumers located upstream, preventing downstream pressure from rising above critical values in case of low consumption.

### 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.
- A minimum length of 3 DN downstream and upstream of the valve is recommended for the best accuracy.

### Additional features

- XLC 312/412-FR upstream pressure sustaining and downstream pressure reduction valve with back-flow prevention.
- XLC 312/412-H upstream pressure sustaining and downstream pressure reduction valve with high sensitivity pilot.
- XLC 312/412-5 upstream pressure sustaining and downstream pressure reduction valve with solenoid control.

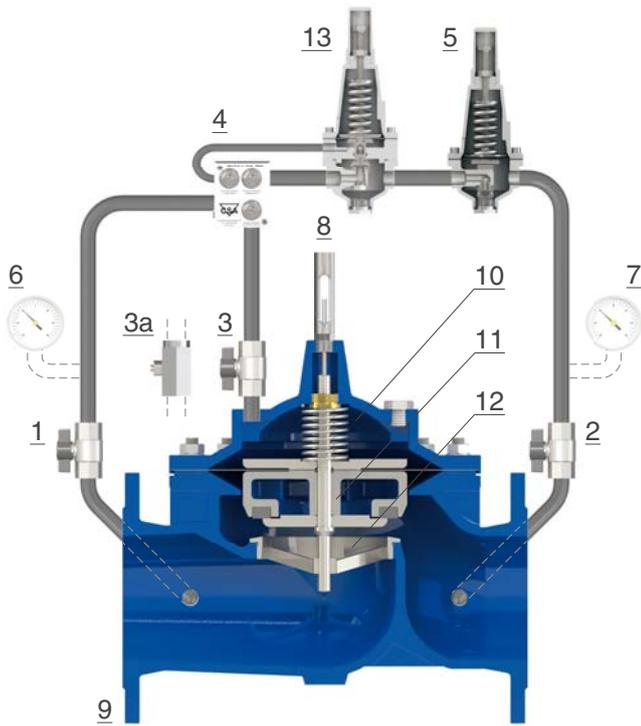
### Working conditions

- Fluid: treated water.
- Minimum operating pressure: 0,7 bar.
- Maximum operating pressure: 25 bar.
- Maximum temperature: 70°C.

### Downstream and upstream pilots range

- Blue spring: 0,7 to 7 bar.
- Red spring: 1,5 to 15 bar
- Higher values up to 25 bar on request.
- For the pressure reduction pilot values lower than 0,7 available with high sensitivity pilots.

## Operating principle



The CSA model XLC 312/412 is an automatic control valve operated by two 2 ways pilots, respectively for the upstream pressure sustaining (13) and the downstream pressure reduction, (5) both with pre-set set and adjustable value. Should the upstream pressure fall below the master pilot's (13) set point the latter will throttle and limit the flow to direct inlet pressure to the main chamber (10), to sustain and stabilize the upstream pressure to a constant value. Should the upstream pressure be higher than the pilot's (13) set point the latter will open, allowing flow through the main valve (9) where at this point the pilot (5) will control and maintain the required downstream pressure. The flow in and out of the main chamber (10) is controlled by the CSA exclusive unit regulation device with filter called GR.I.F.O. (4) and provided with three needle valves and flow stabilizers, needed for the valve's response time and accuracy also in case of rapid variation in demand.

## Installation layout

The XLC 312/412 installation lay-out includes sectioning devices (1, 2) and by-pass for maintenance, and a filter (3) to prevent dirt from reaching the control valve. The direct acting pressure sustaining VSM (8) and reducer VRCD (4) are the best choice on the by-pass thanks to their reliability also after long periods of inactivity. Anti-surge combination air valves FOX 3F AS (6, 7) are recommended upstream and downstream as well as an additional pressure relief valve VSM (5) to prevent rise in pressure on the line.

