



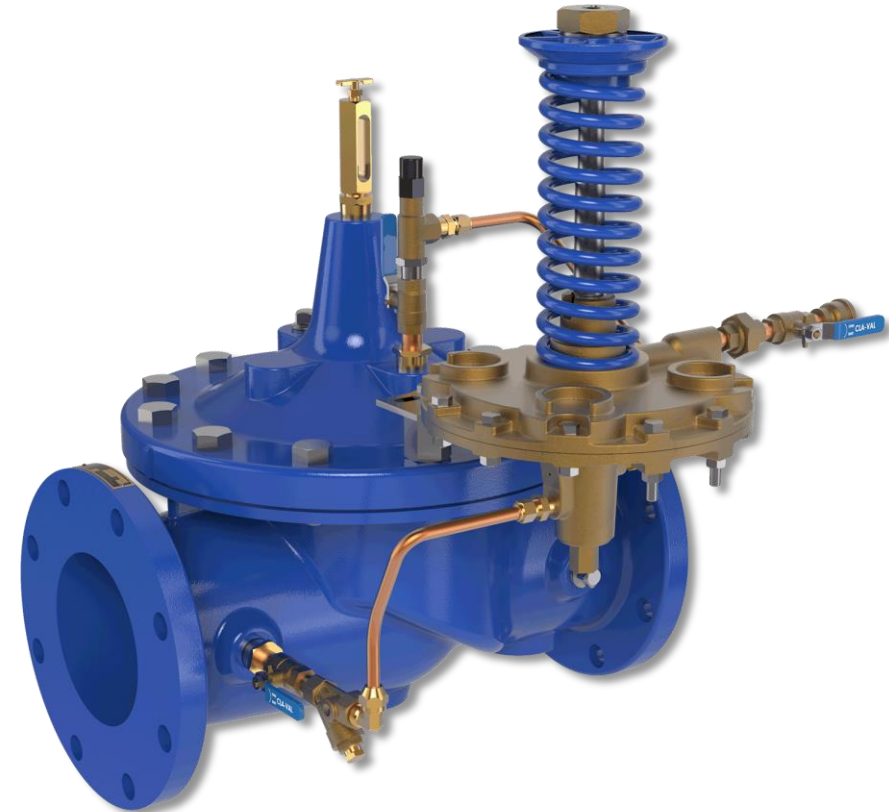
2022 Clean and Safe Drinking Water Workshop



...Where knowledge flows

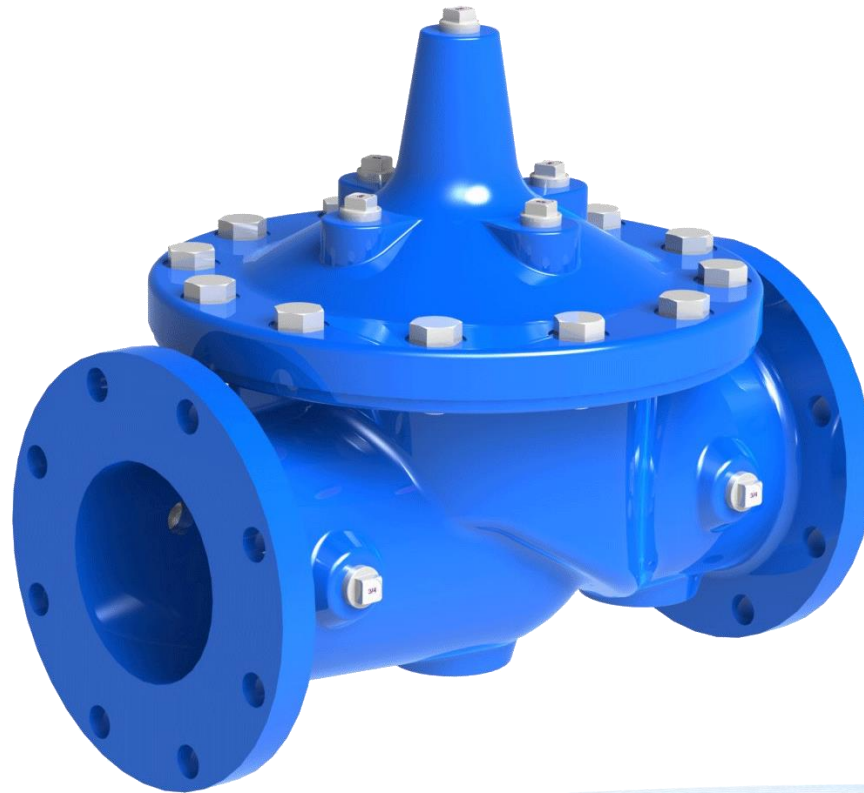


Level Control and Altitude Control Valves



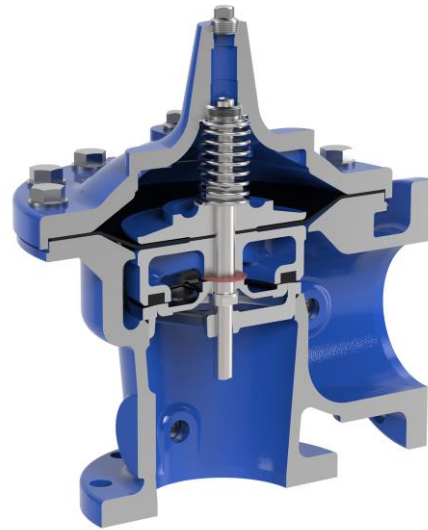


Cla-Val Product Training: Main Valve Overview



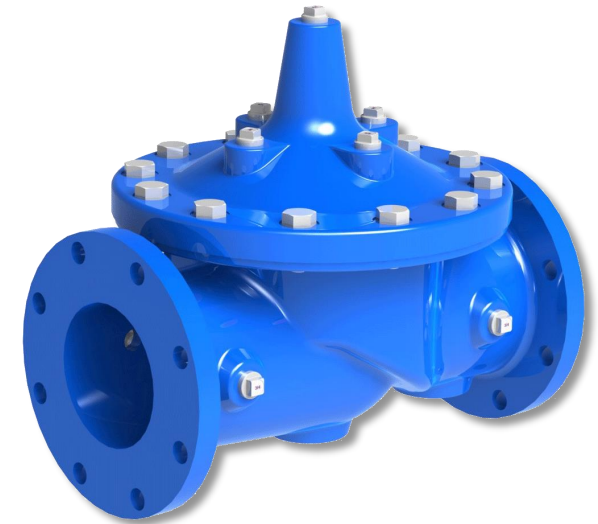


Main (Basic) Valve



HYTROL

Hydraulic Control



Cla-Val Model 100-01 and 100-20
Used in 75% to 80% of all applications



Basic Hydraulics

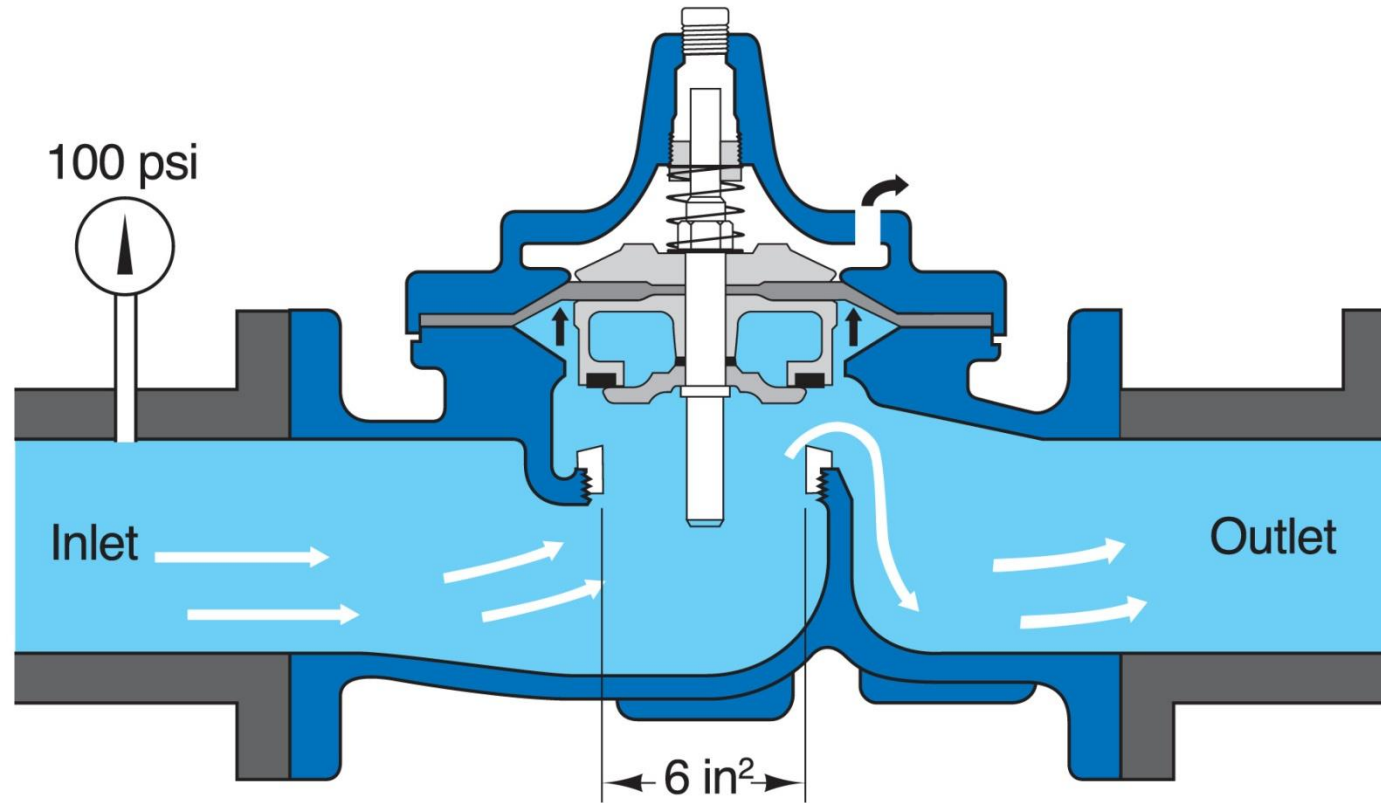




Pressure X Area = Force



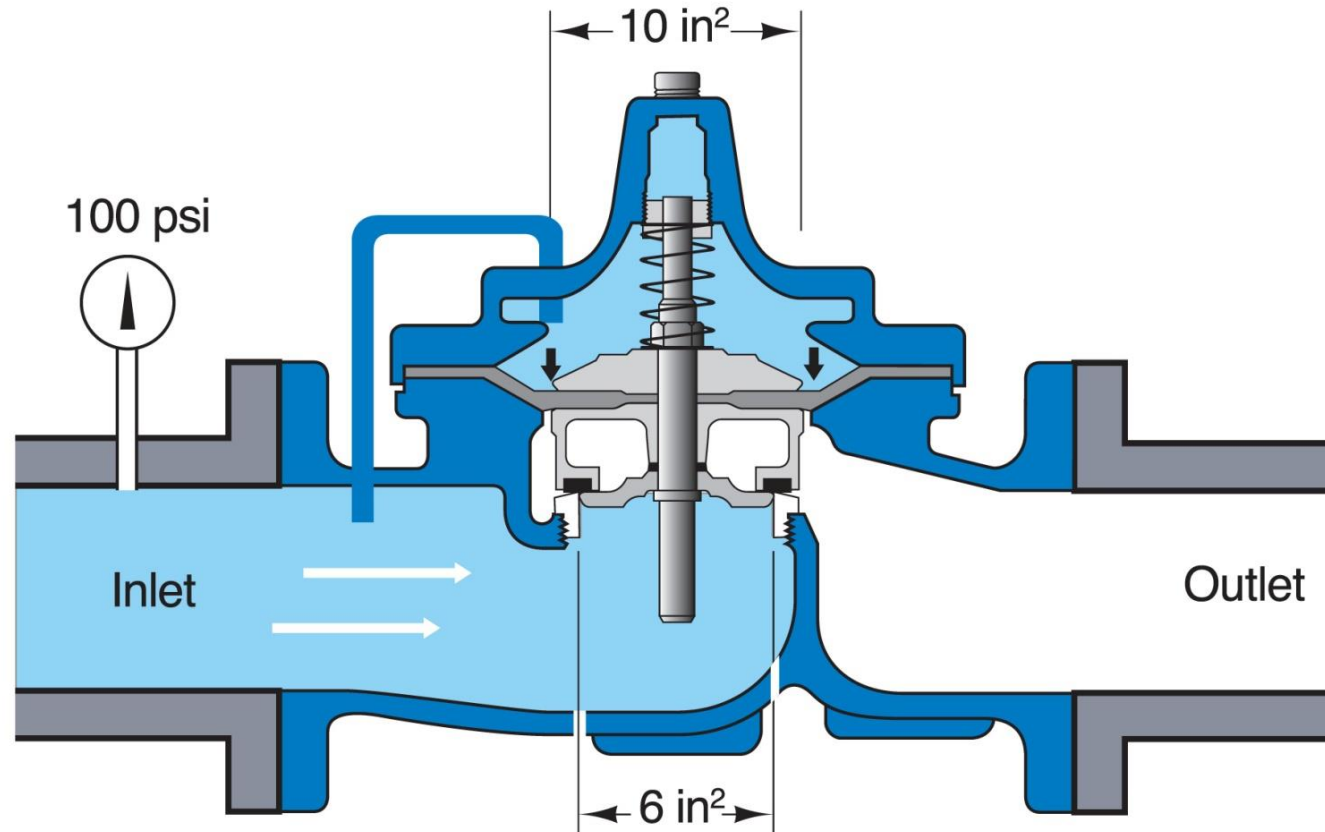
Line Pressure to Open



$$100\text{psi} \times 6 = 600\text{lbs.}$$



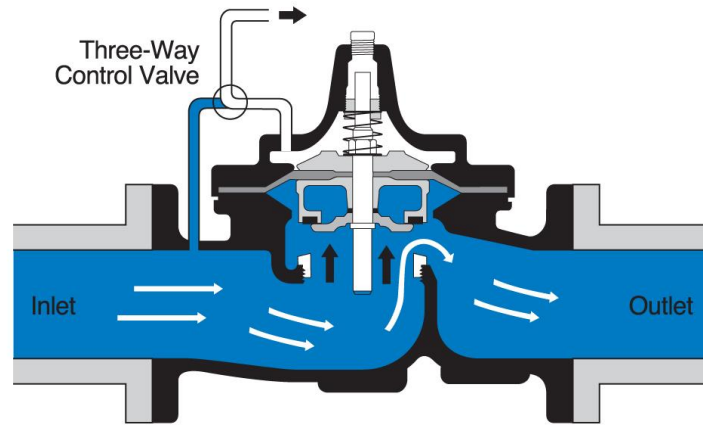
Line Pressure to Close



Closing Force $100 \times 10 = 1000 \text{ lbs.}$
Opening Force $100 \times 6 = 600 \text{ lbs.}$
Difference = 400 lbs.

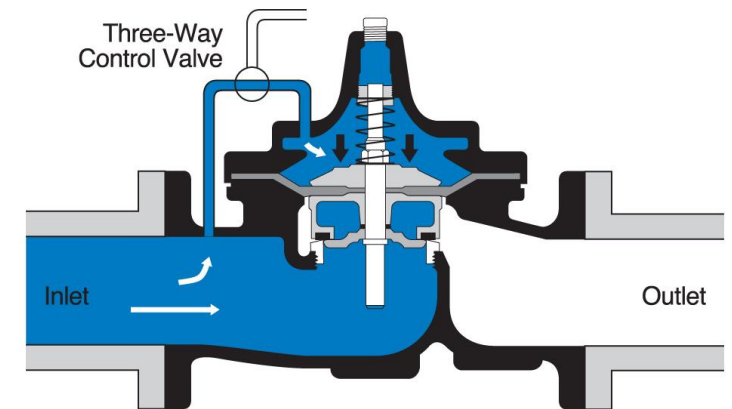


Non-Modulating Controls



A simple control which either opens the valve wide or closes it tightly is a three-way valve. The type of operation this control gives is called “non-modulating” because the valve cannot pause in a partially open position.

Once the control is turned to either position, operating fluid flow into or out of the cover chamber until the valve is open or closed. To close, control is turned to apply pressure to cover chamber.

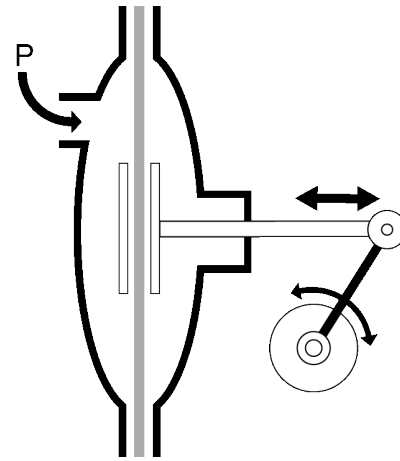
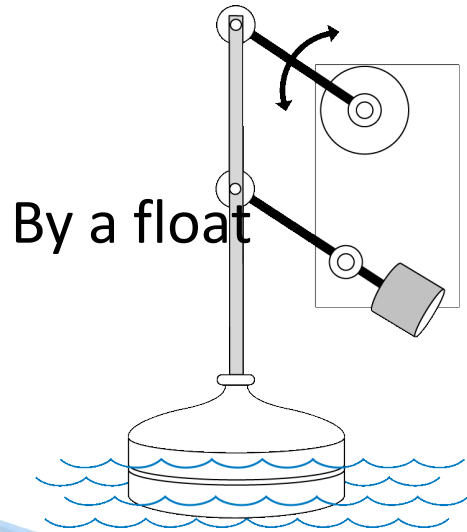




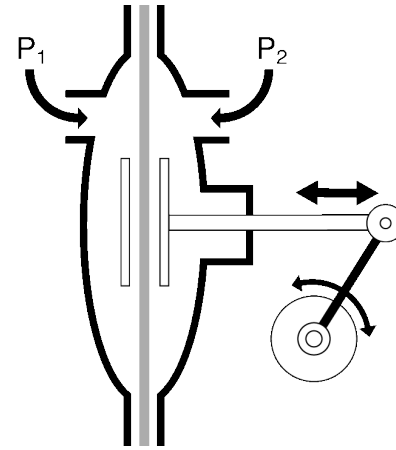
Non-Modulating Controls



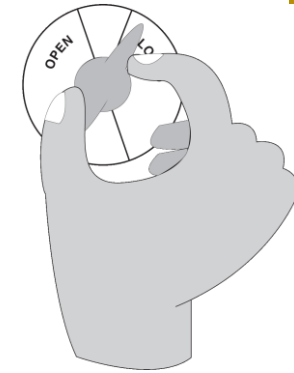
Types of Non-Modulating Controls



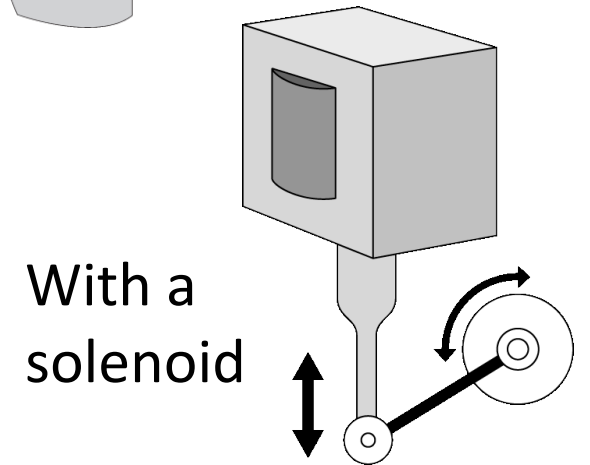
By pressure



By the difference in two pressures



By hand



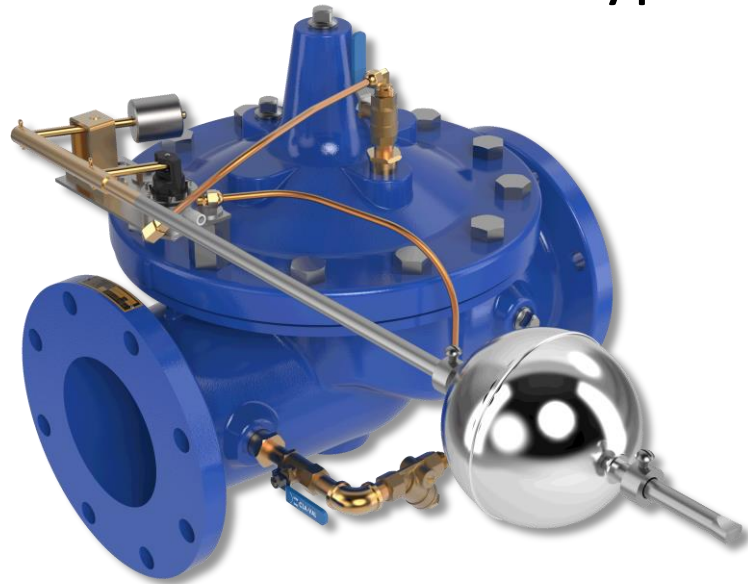
With a solenoid



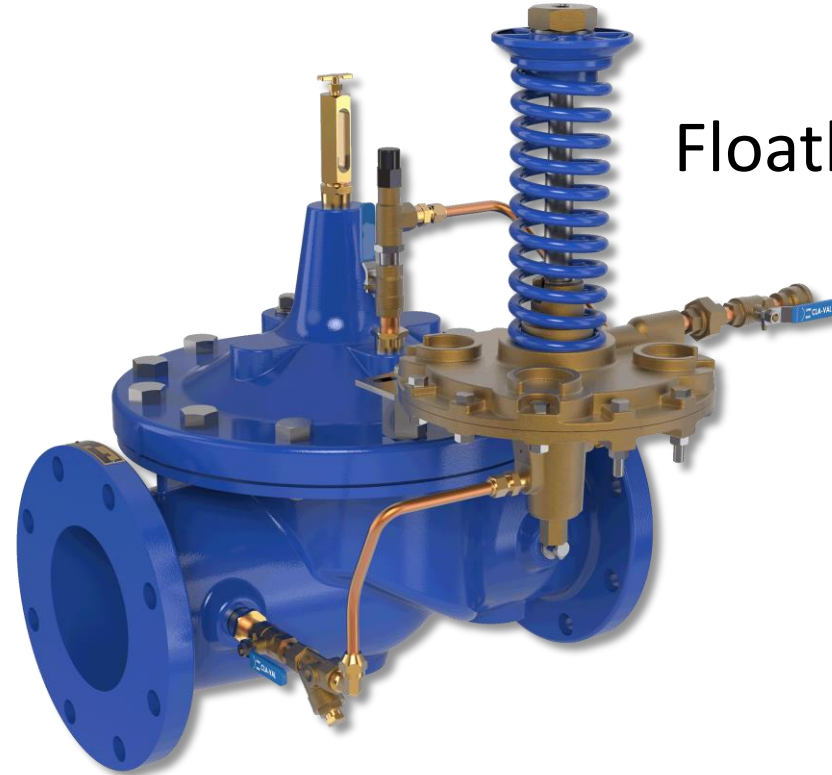
Level Control Valves: Two Basic Types



Float Type



Floatless Type

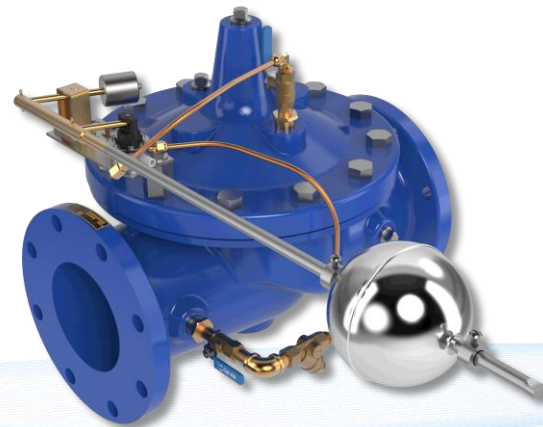
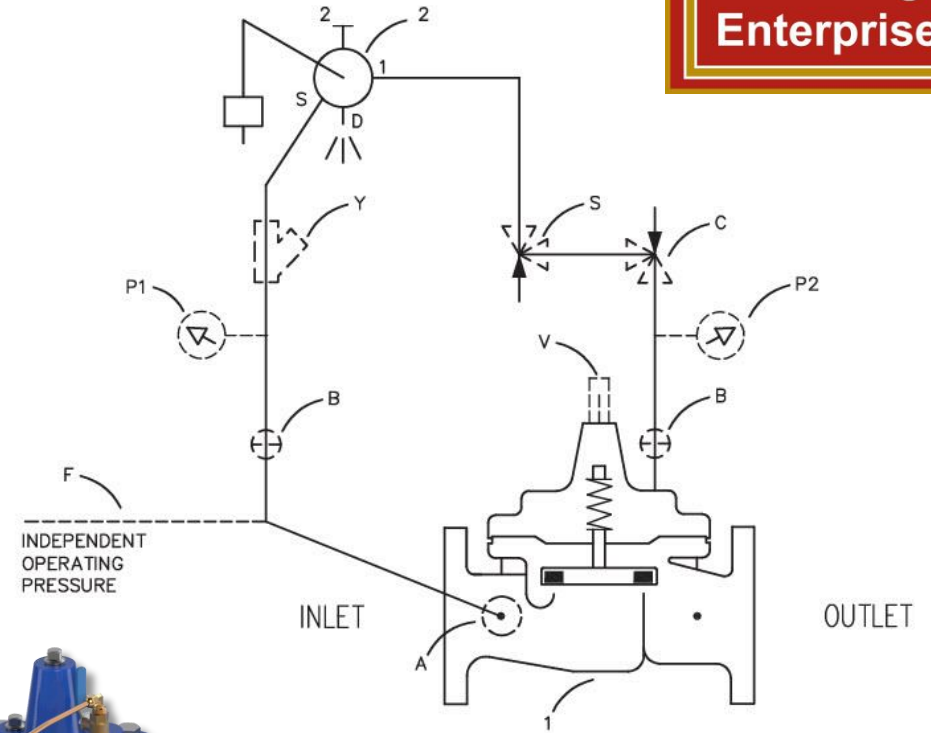




Float Control Valve



- Opens when liquid level reaches a pre-set low point and closes drip-tight when level reaches a preset high point. This function is actuated by a 3 way rotary pilot, float rod, assembly float and a counter weight.





Where do we find applications for Float Control Valves?



- Examples: tanks, ponds for golf courses , building complexes, and swimming pools!





Valves in the Field

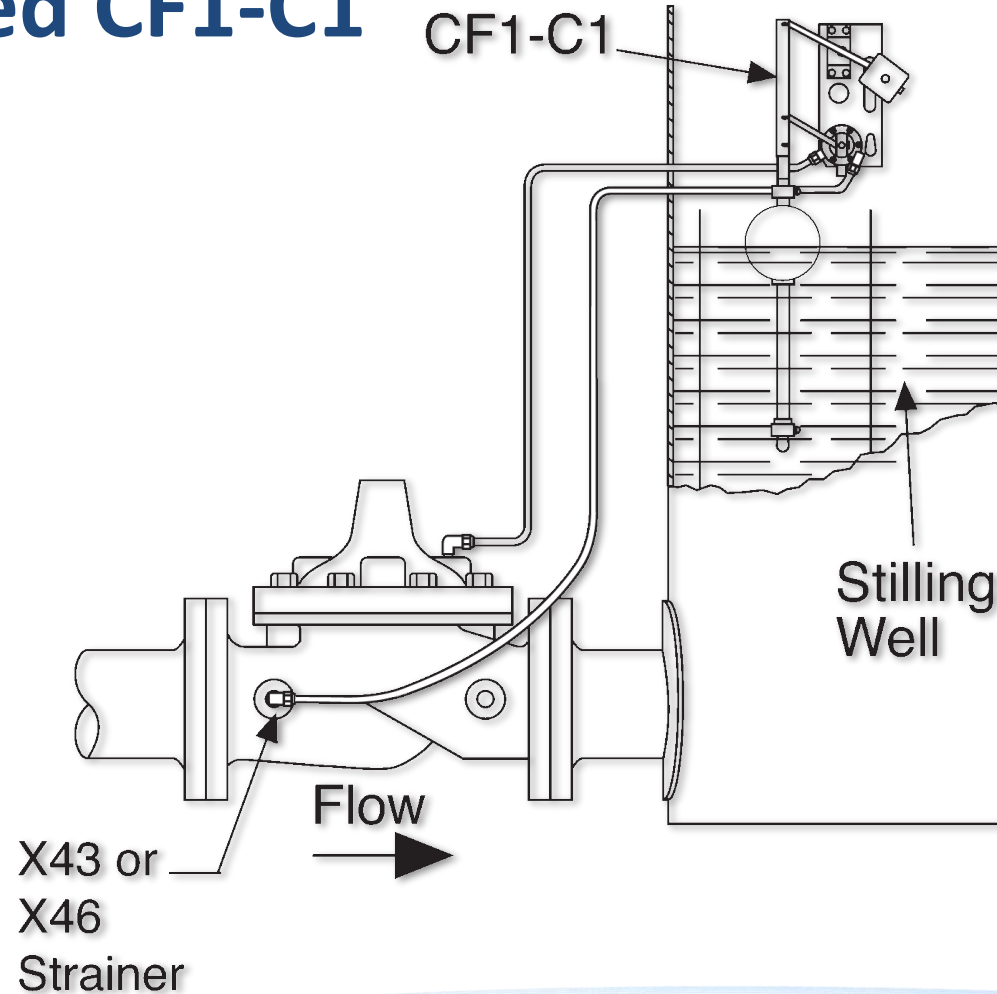




Installation: 124-01 with Remote Mounted CF1-C1



- When CF1-C1 is remotely mounted, it must be installed at any elevation above centerline of the valve
- The control tubing must be a minimum of 3/8" tubing size

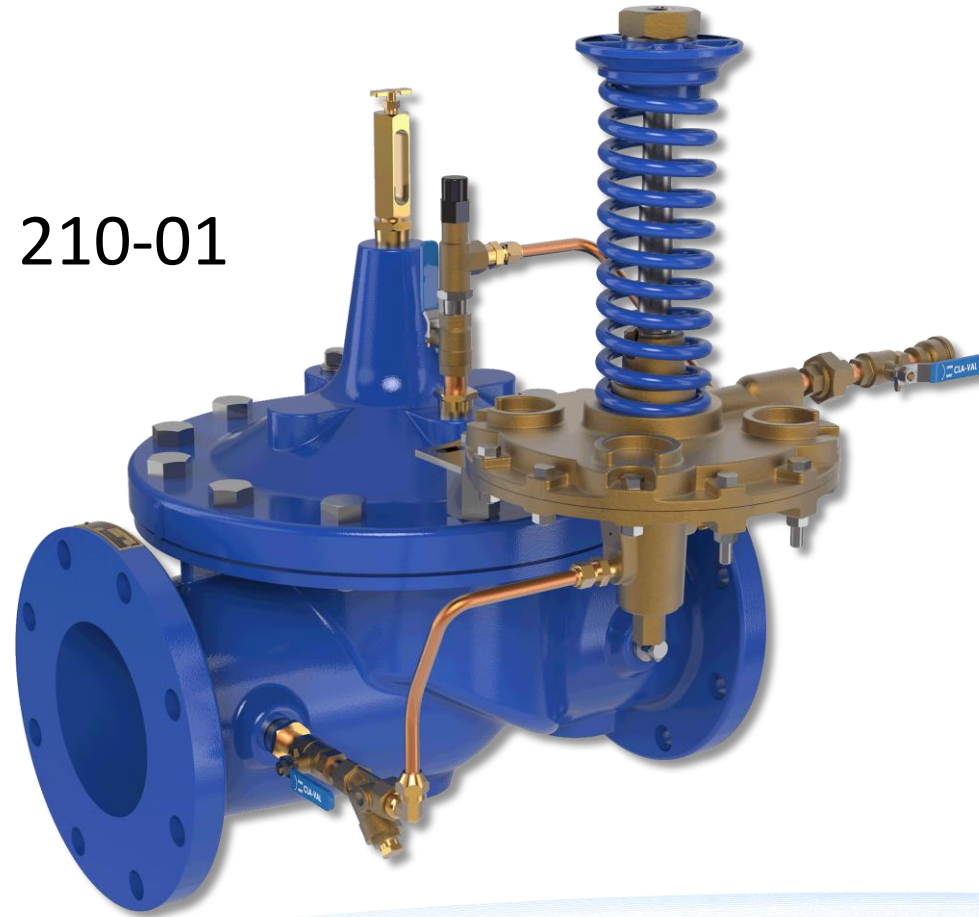




Altitude Control Valves (Float less) (On-Off, Non-Modulating)



Model 210-01

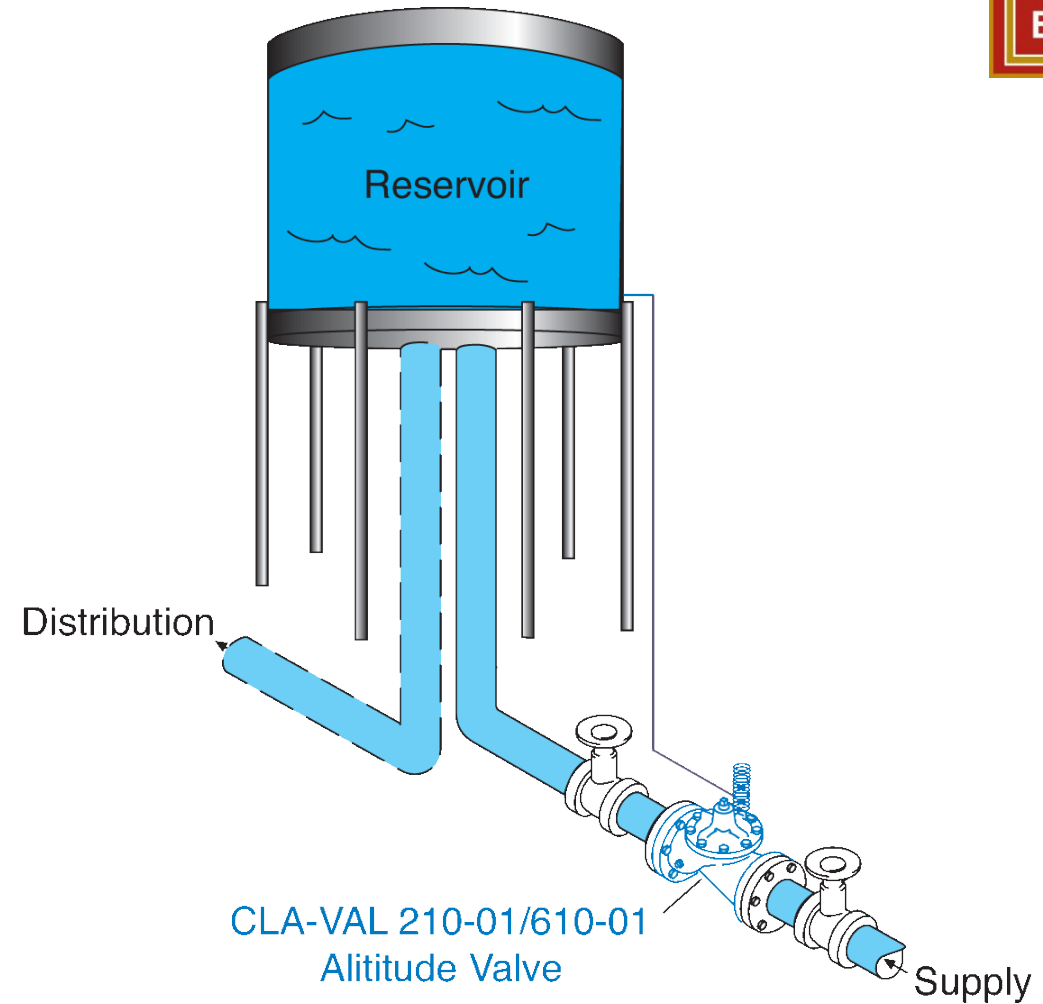




Level Control Using Cla-Val Altitude Valves



Altitude Valves are designed to shut-off when the reservoir reaches a high level setting by sensing tank head pressure against pilot spring tension .





Installation: Above Ground Tank



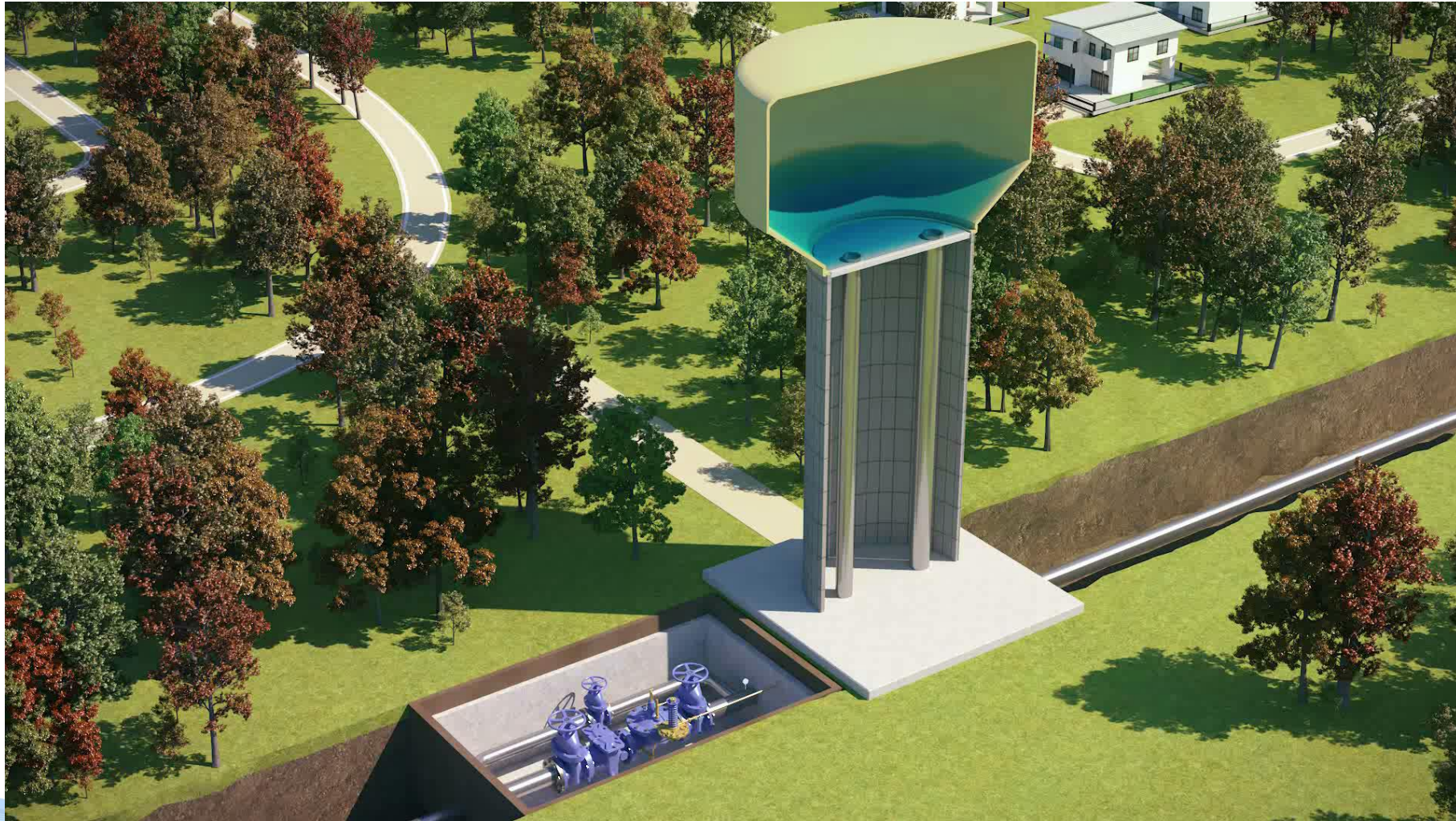


Installation: Above Ground Elevated Storage Tank





210-01 One-Way Flow





210-09 Hydraulic Level control with Pressure Sustaining



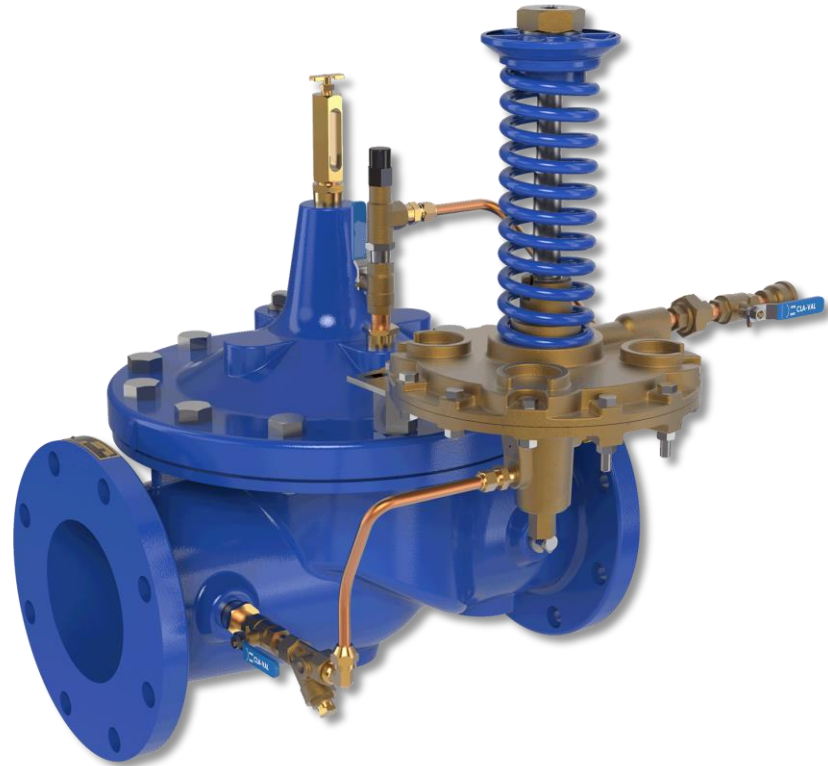


58-01 Sustaining valve with Solenoid Control





Altitude Control Valves: Basic Operation



- 210 Series Altitude Valves control the high water level in reservoirs without the need for floats or other devices
- Altitude Valves are on-off non-modulating type valves
- They remain fully open until shutting off when the level in the reservoir reaches a pre-determined level



Altitude Control Valves



- All 210 Series Altitude valves are equipped standard with X101 Position Indicator
- Important feature in determining if valve is opening or closing

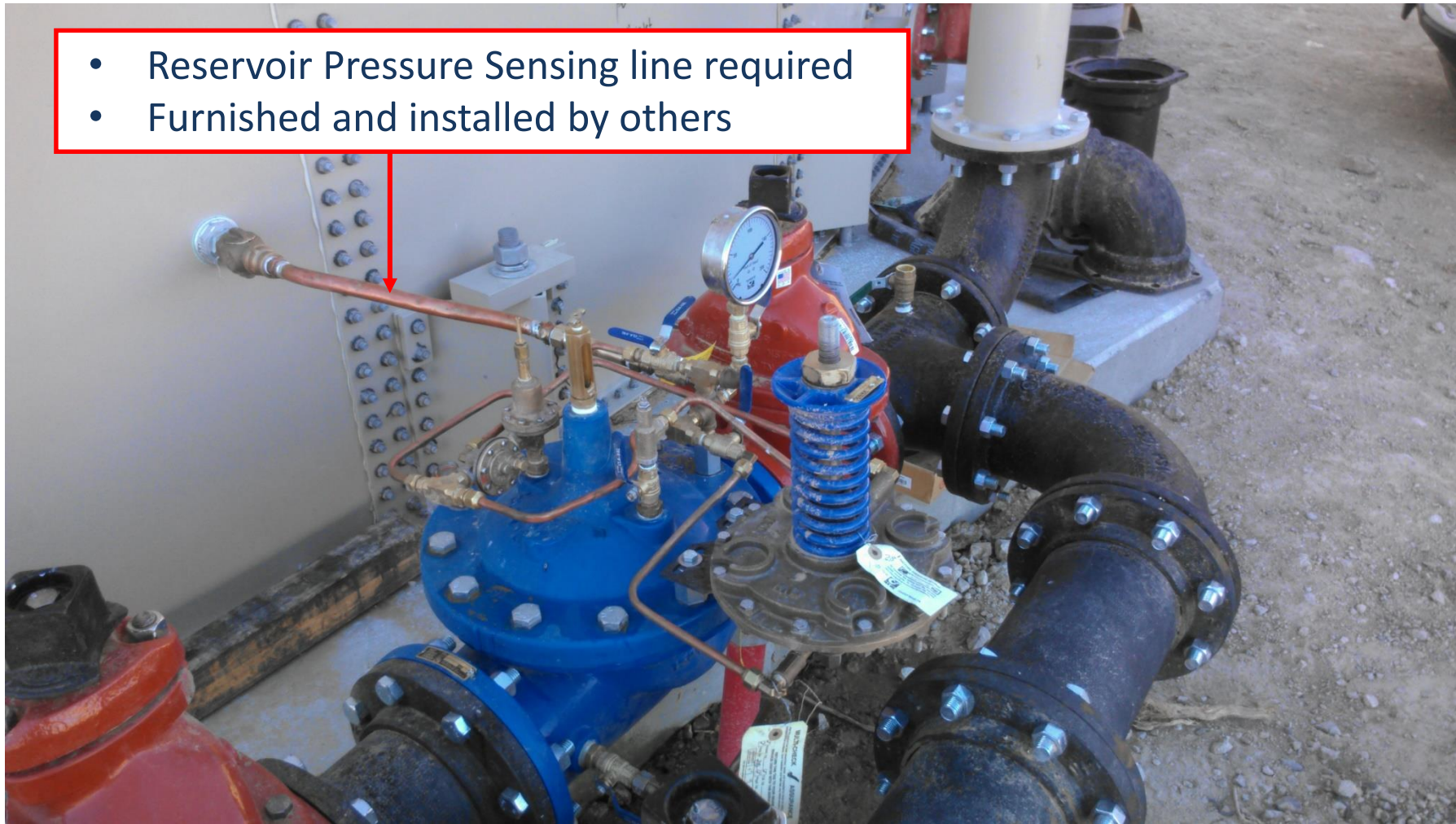




Altitude Control Valves Installation

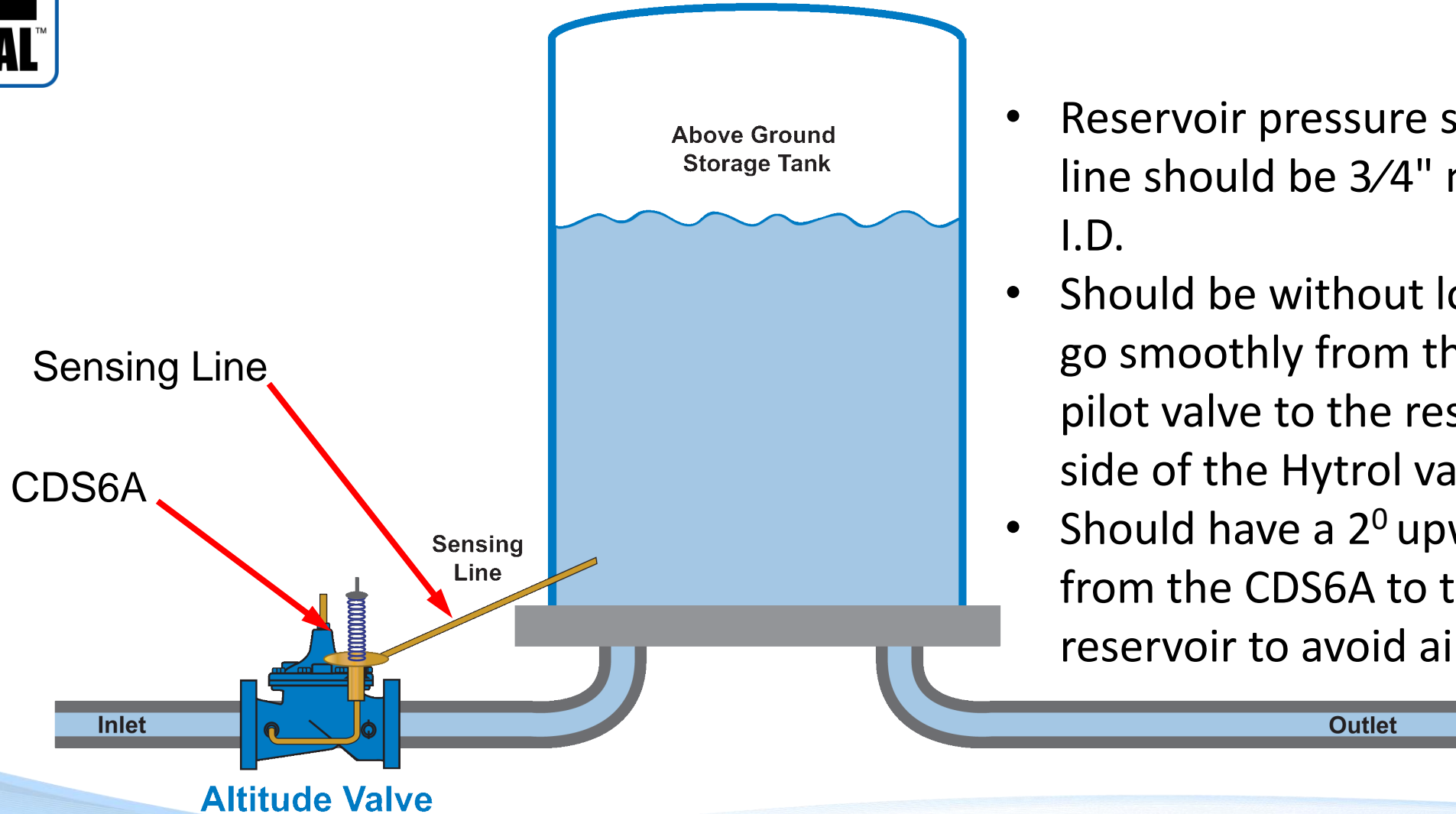


- Reservoir Pressure Sensing line required
- Furnished and installed by others





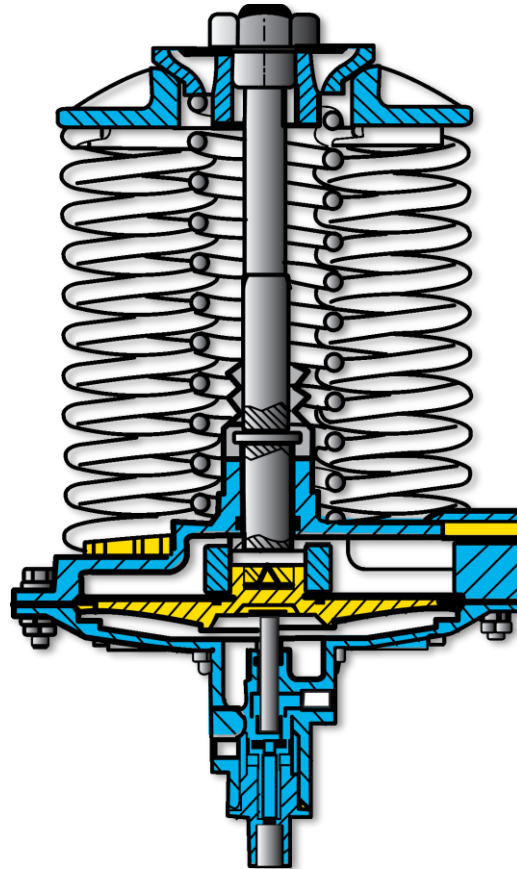
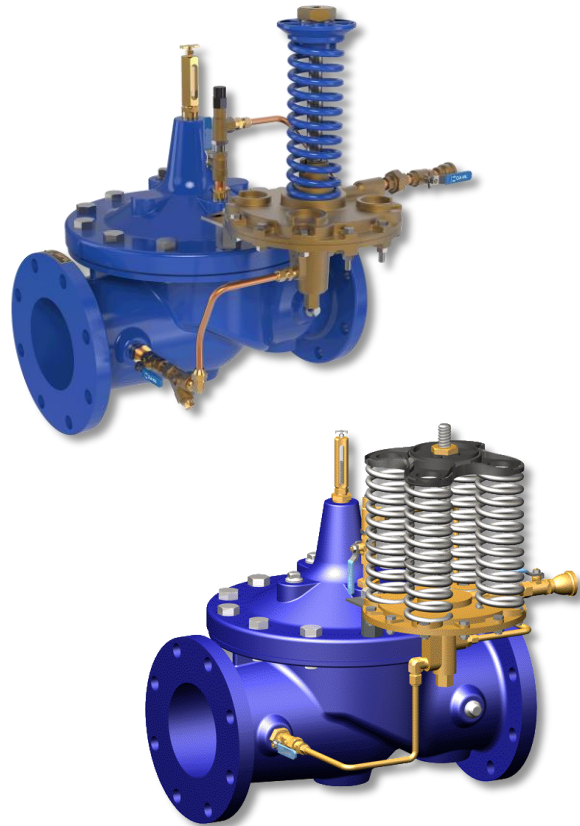
Altitude Control Valves Installation



- Reservoir pressure sensing line should be 3/4" minimum I.D.
- Should be without loops and go smoothly from the CDS6A pilot valve to the reservoir side of the Hytrol valve body
- Should have a 2° upward slope from the CDS6A to the reservoir to avoid air pockets



CDS6A Level Control Pilot



- Three-way pilot type
- From one up to 5 springs
- Spring adjustable level setting
- Five Spring Ranges:
 - 5-40 ft.
 - 30-80 ft.
 - 70-120 ft.
 - 110-160 ft.
 - 150-200 ft.
- Reservoir level sensed as pressure from tank head changes

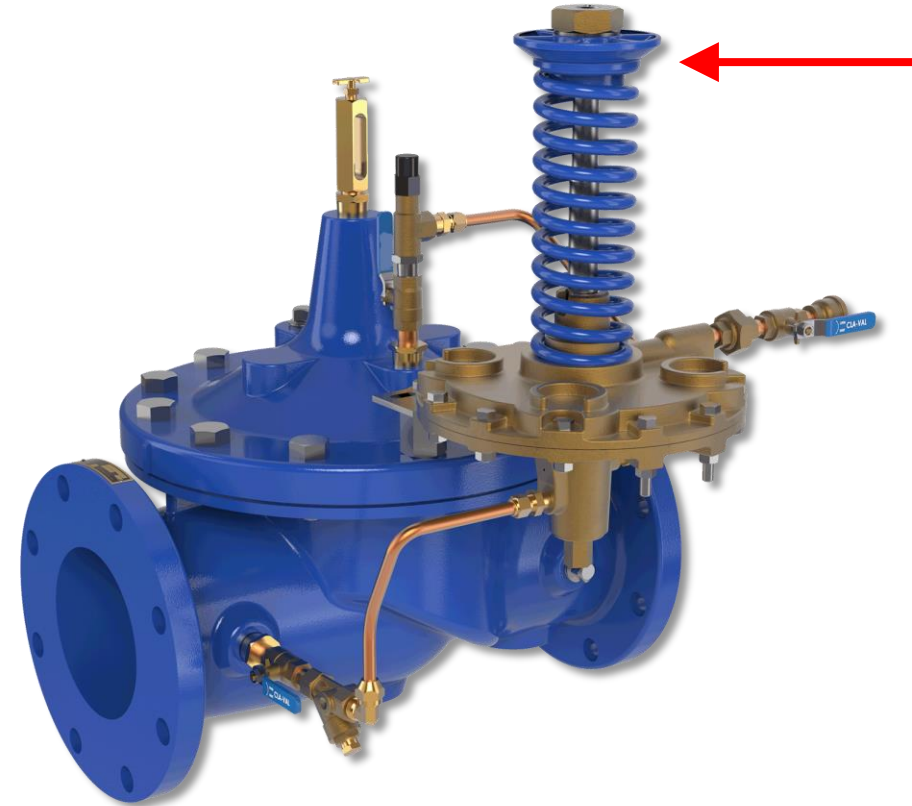


CDS6A Level Control Pilot

Set points are easy to adjust

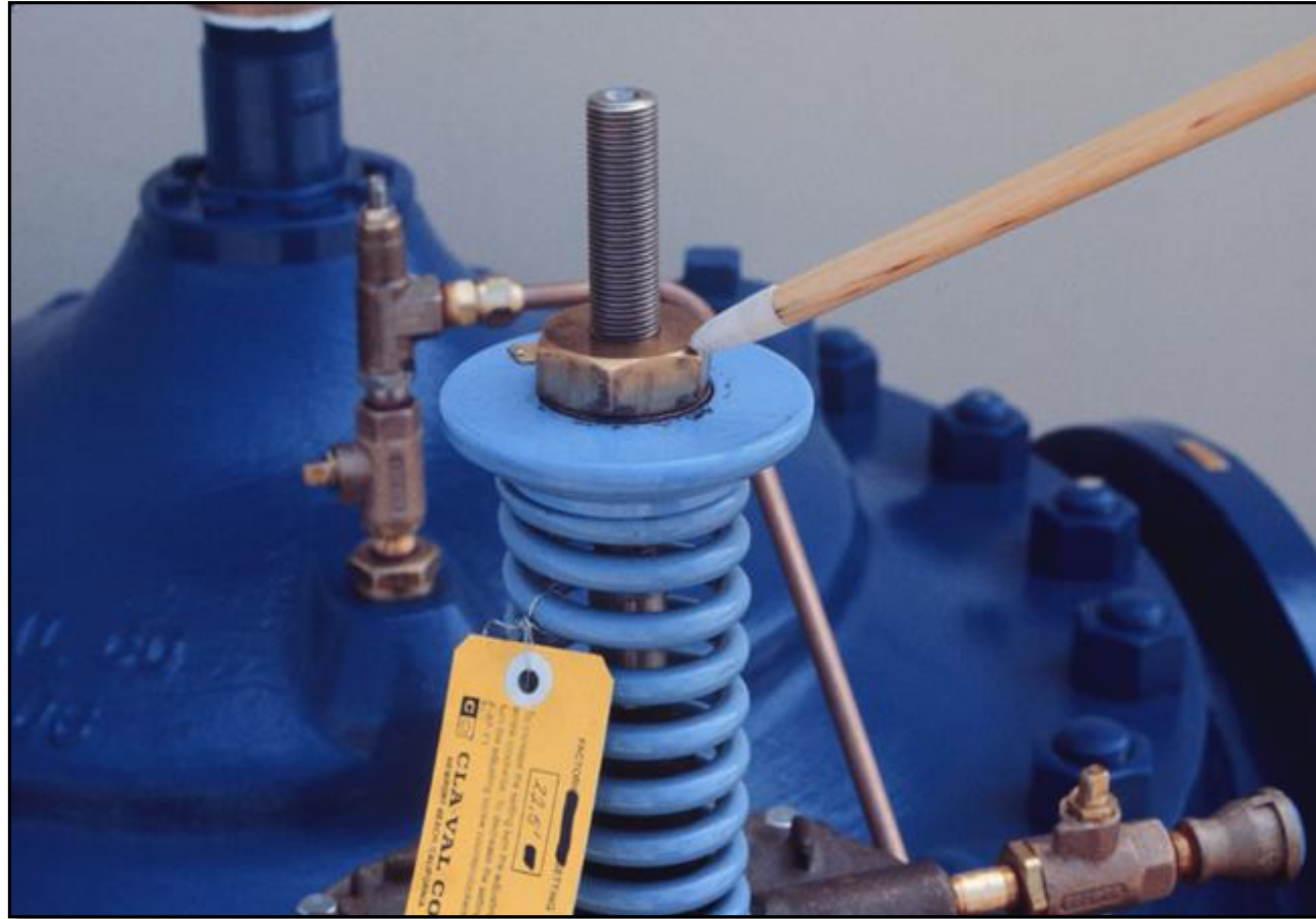


- Adjust Clockwise to increase shut off level
- Adjust Counter Clockwise to decrease shut off level
- Use vent valve at top of X101 position indicator to bleed air from valve





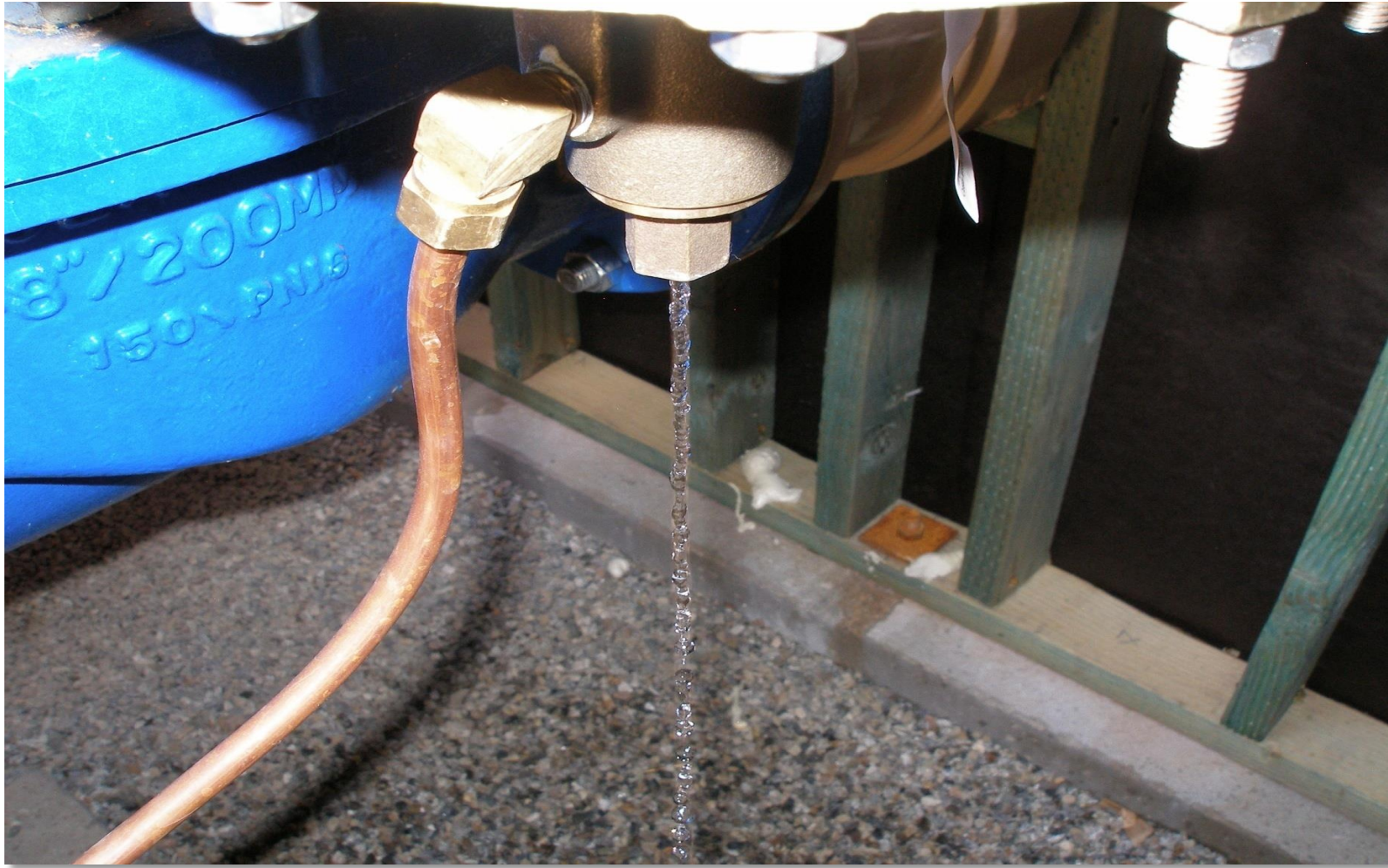
210 Altitude valve should be set when reservoir is at shut-off level.





Left Hand Mount







Altitude Control Valves Trouble Shooting



- The reservoir level must be at the desired shut-off level when adjusting/setting the CDS6A pilot.
- Use accurate pressure gages and X101 valve position indicator
- Check pilot system for air entrapment or dirt
- Check sense line for proper installation
 - Verify control adjustment
 - Vent air from sense line and cover chamber
 - Check for clogged strainer
- Check Hytrol main valve



Questions?





CVU **CLA-VAL**
UNIVERSITY



Thank You For Attending