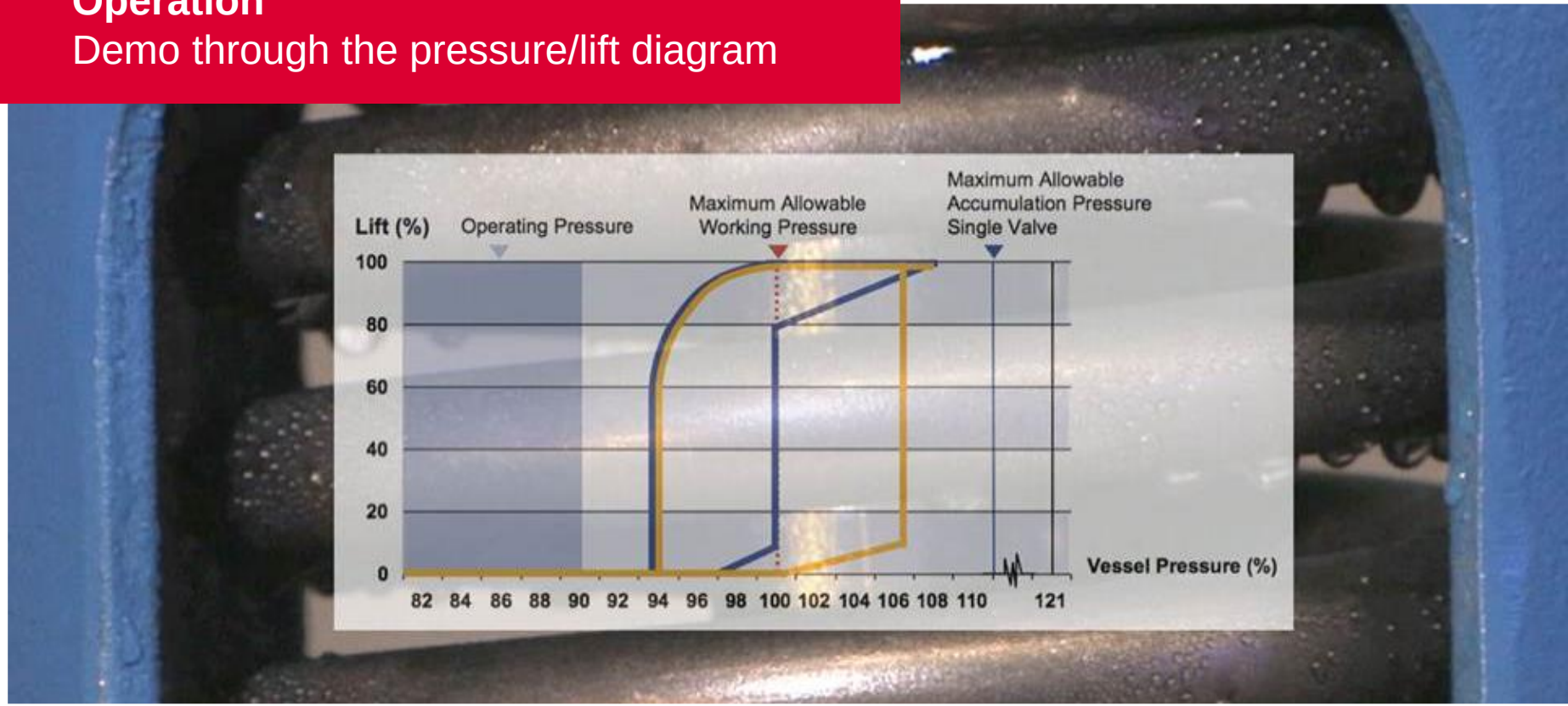
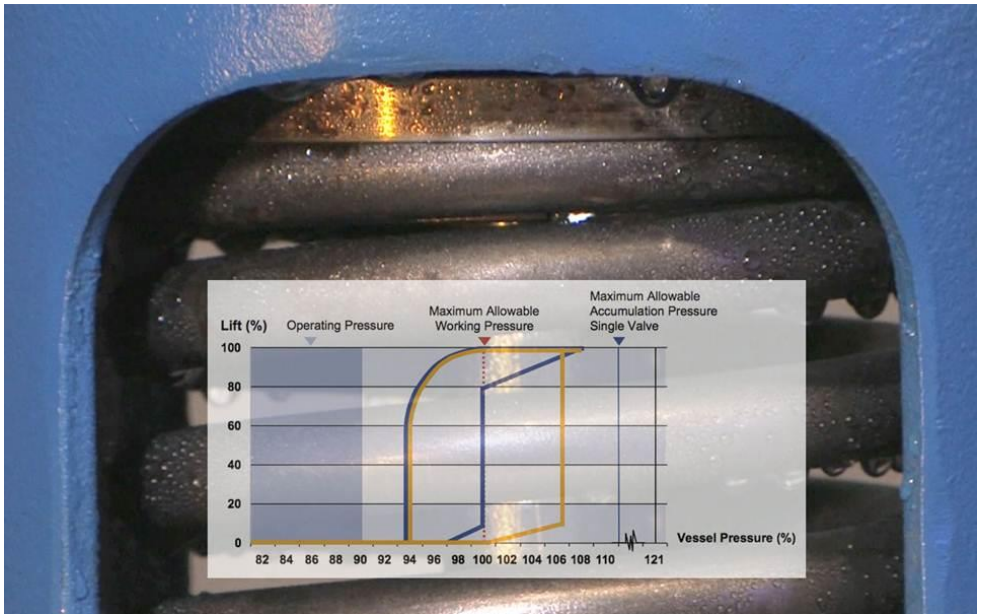
Operation
Demo through the pressure/lift diagram

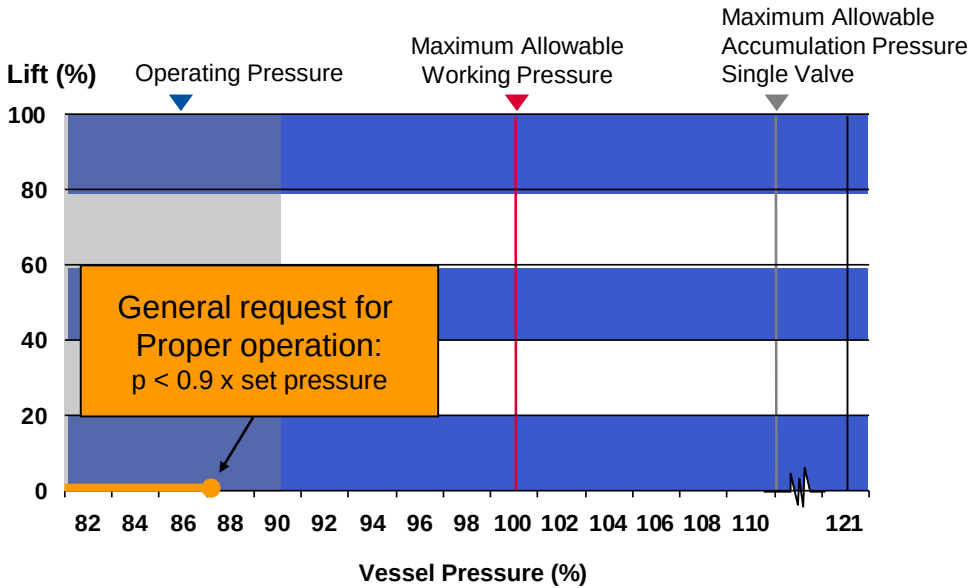


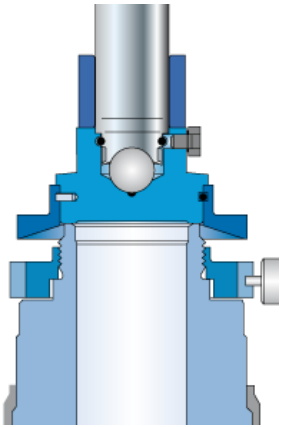
Objectives of this Presentation. Knowledge to learn.

The aim of this presentation is to explain the **operation of the safety valve** by means of the **pressure/lift diagram.**

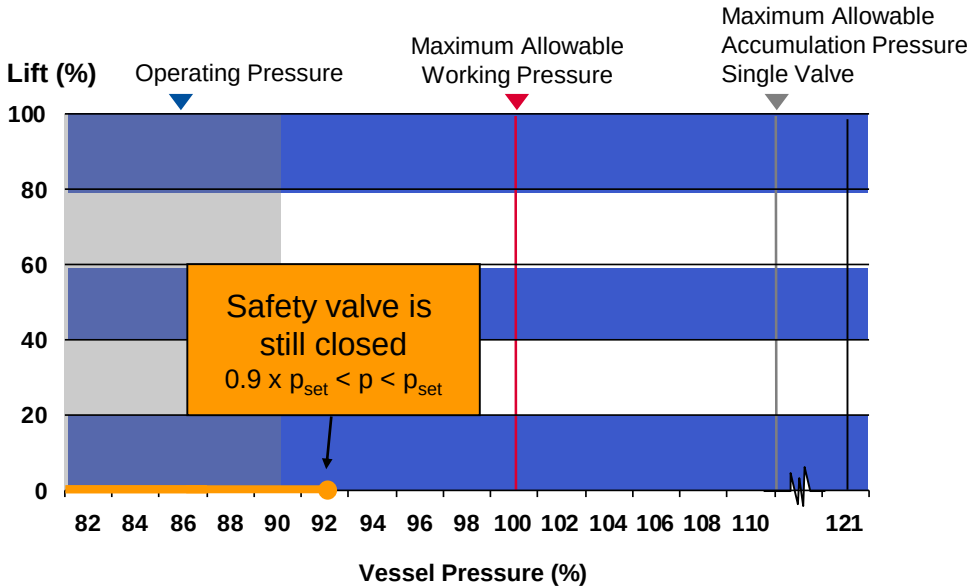


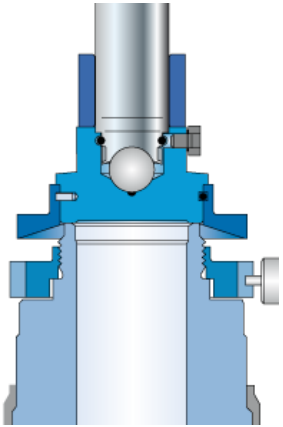
Operation. Typical opening characteristic 1.





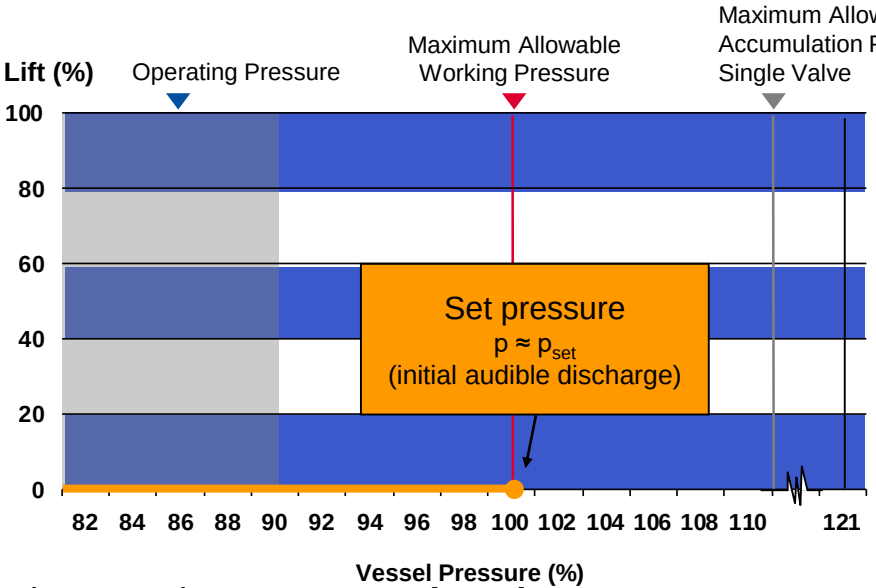
Operation. Typical opening characteristic 2.

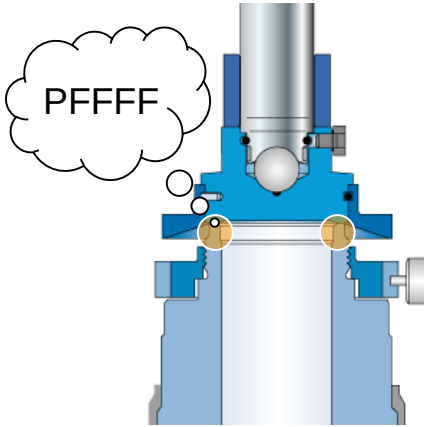




- Start of **upset situation**
- The vessel **pressure range exceeds** the operating pressure
- The **pressure increases** at the inlet of the safety valve

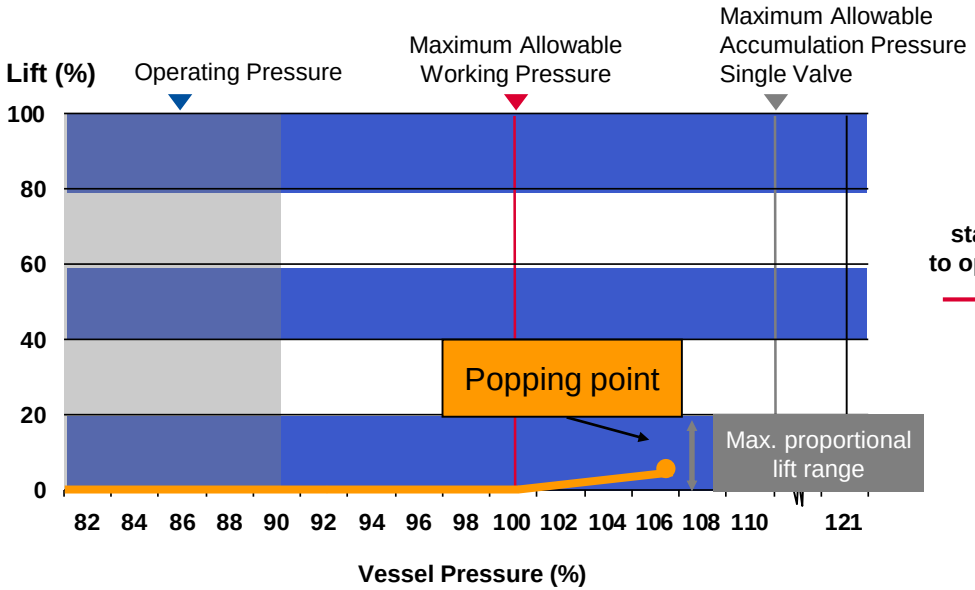
Operation. Typical opening characteristic 3.

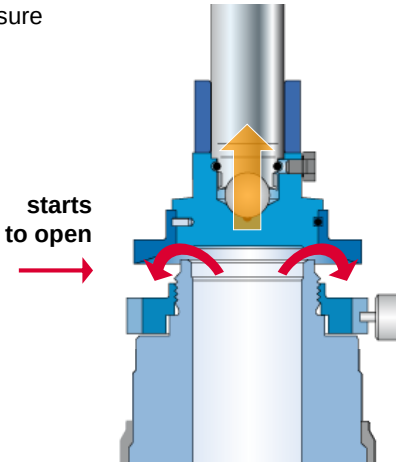




- The vessel pressure **reaches the set pressure.**
- The valve **begins to simmer.**

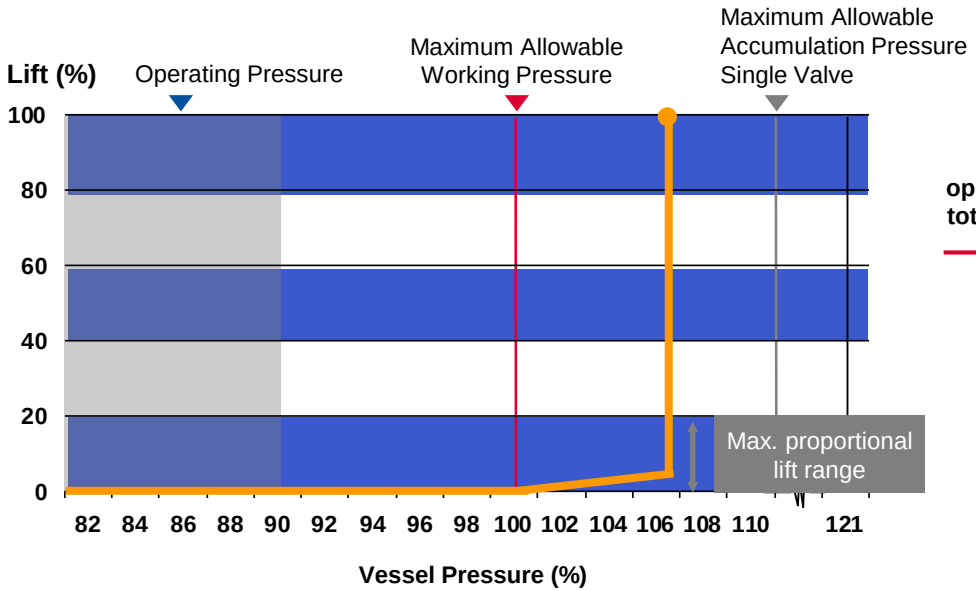
Operation. Typical opening characteristic 4.

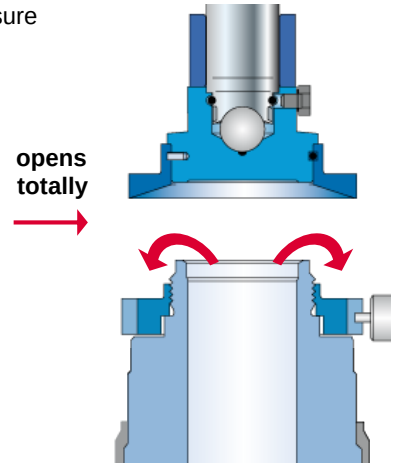




- Valve **starts to open**
- Proportional lift and pressure **increase up to the popping point**.

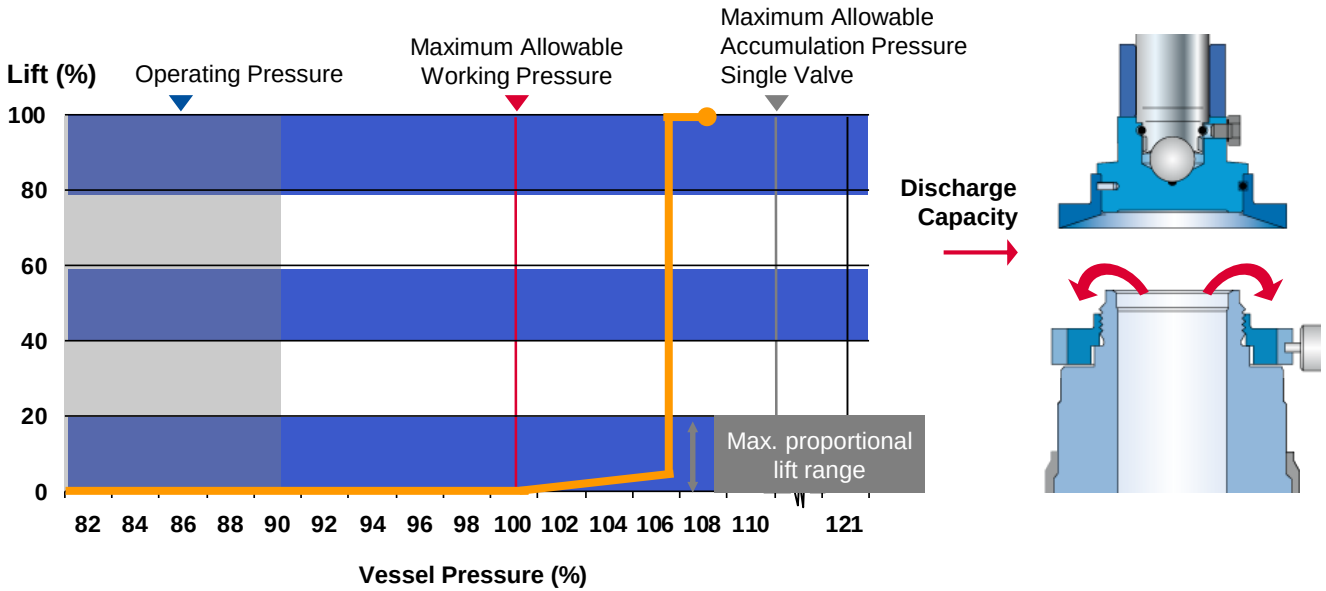
Operation. Typical opening characteristic 5.





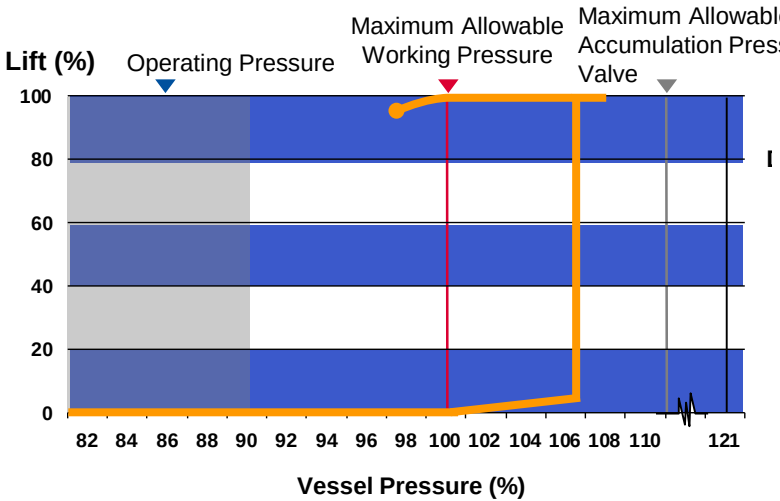
- **Typical pop-action** after reaching the popping pressure
- The safety valve is **fully open**

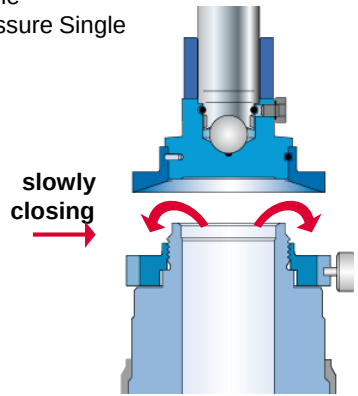
Operation. Typical opening characteristic 6.



- The safety valve **reaches the discharge capacity**

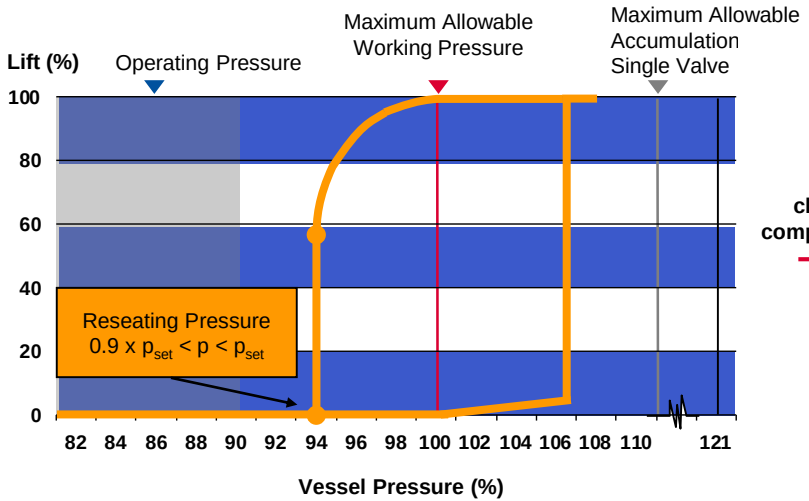
Operation. Typical closing characteristic 7.

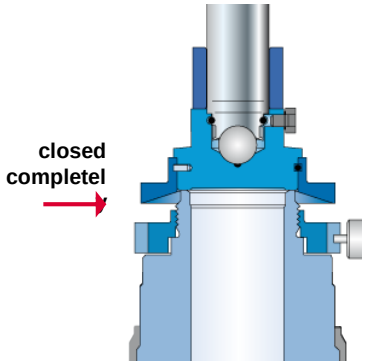




- Upset situation is **resolved**
- The pressure is **decreasing**
- Pressure in the vessel **passes set pressure**
- **Valve remains open** beyond the set pressure!

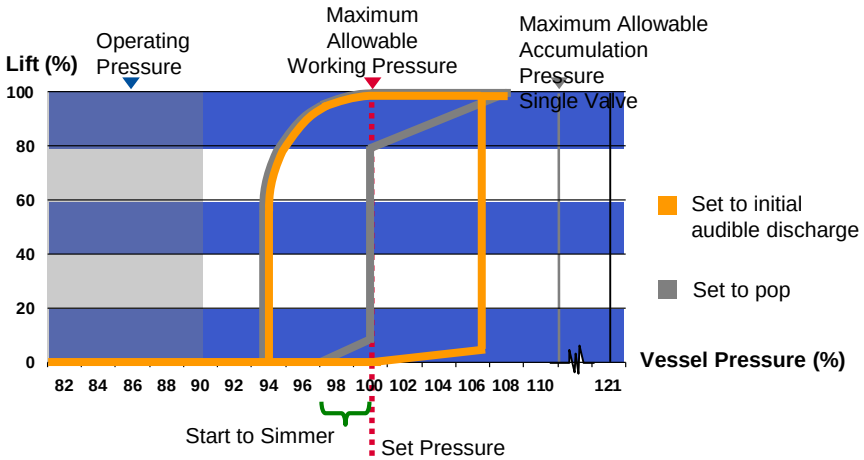
Operation. Typical closing characteristic 8.





- **Approaching the reseating pressure**
- Flow forces and pressure **forces are lower than the spring forces**
- The safety valve will close rapidly to achieve good seat tightness.
- Opening forces are lower than the spring force.

Operation. Initial audible discharge vs. pop.



Advantages of initial audible discharge:

- no simmer before reaching the set pressure
- operating pressure can be closer to set pressure
- surface might be damaged due to pop setting

Operation. Movie.

Operation

Thank you for your attention.