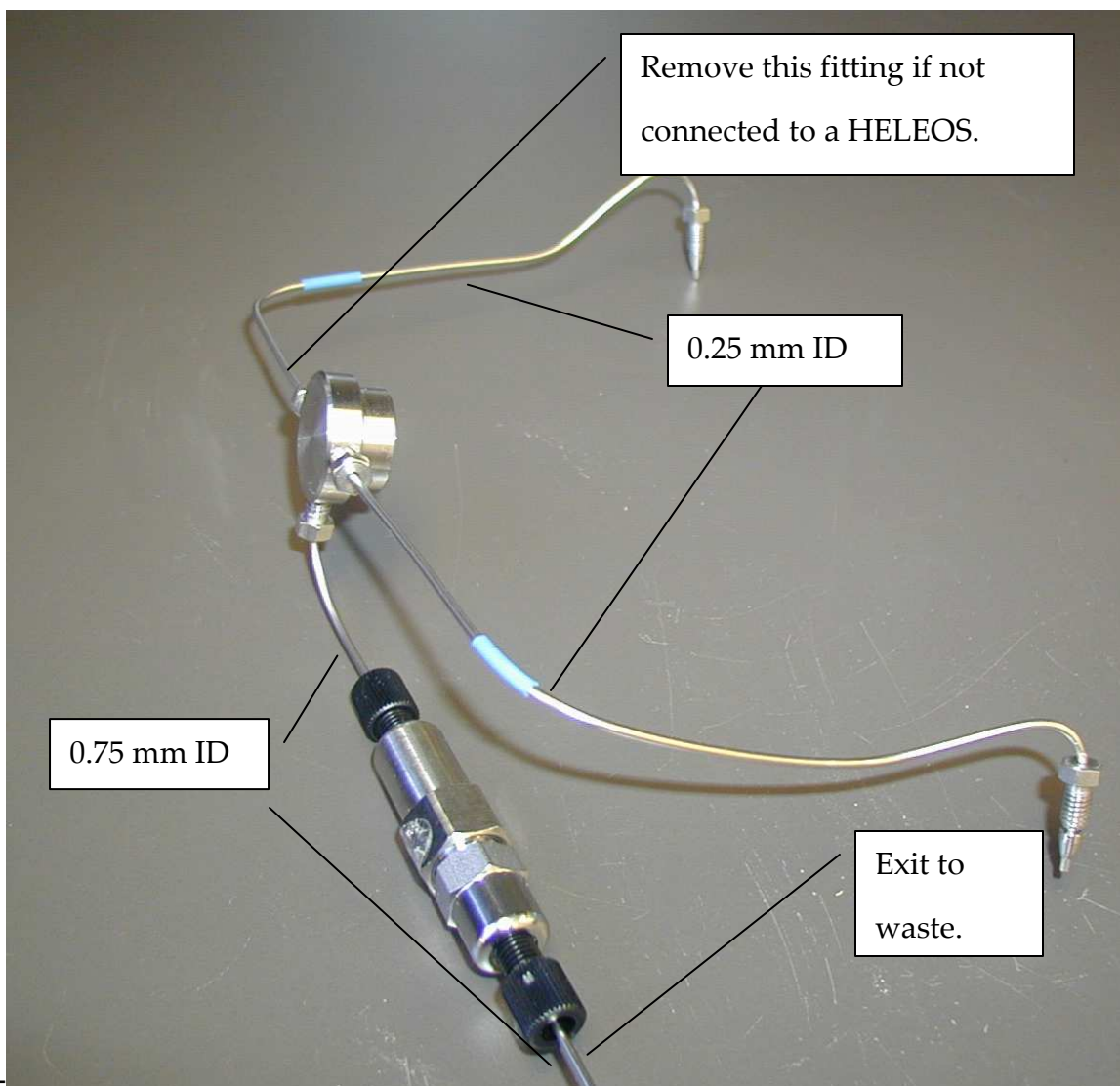


## **VISCOSTAR PRESSURE RELIEF VALVE**

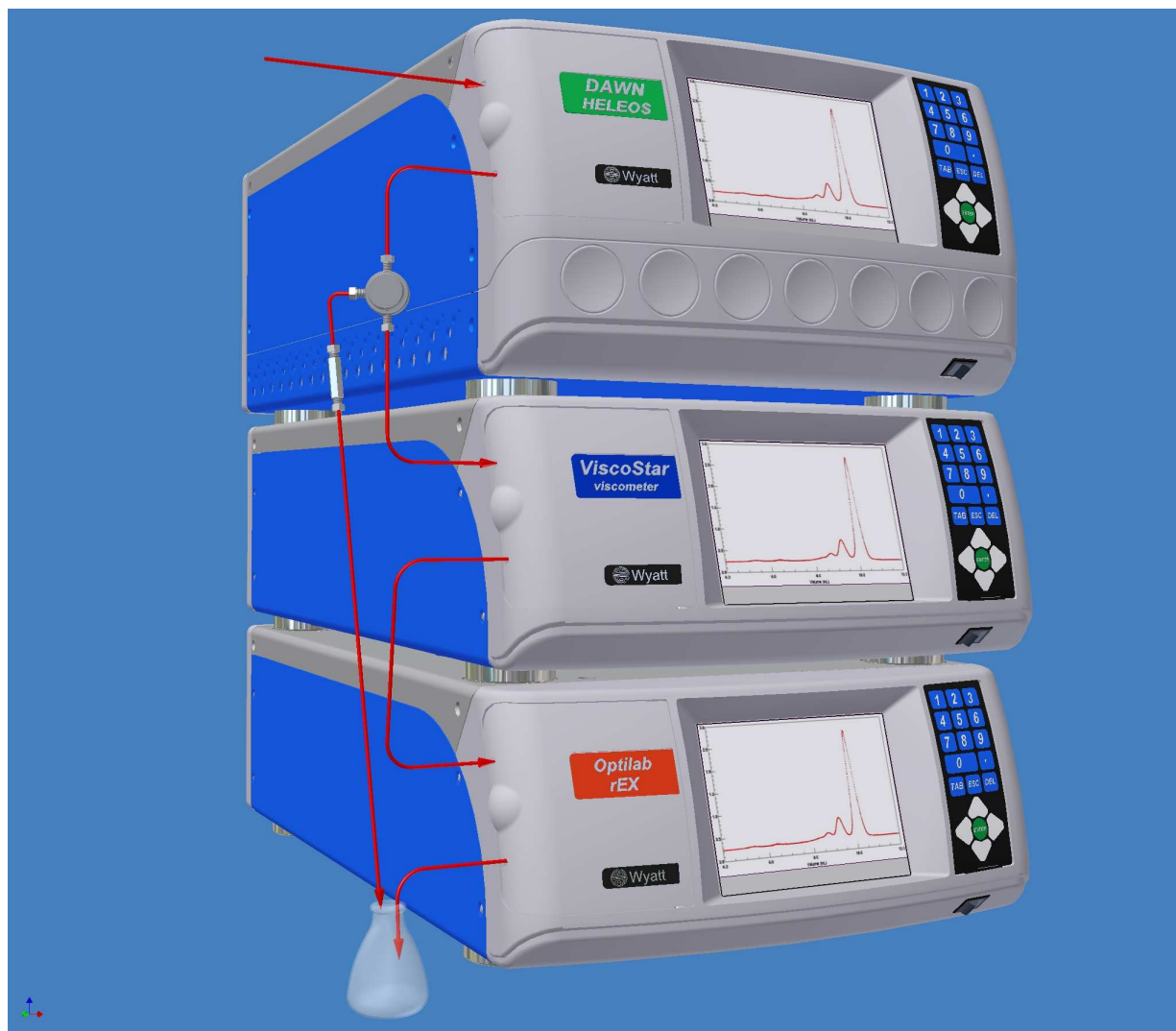
The ViscoStar is rated for continuous service at or below 100 psi (7 bar). The valves internal to the ViscoStar should not leak unless the system pressure exceeds 200 psi (14 bar).

This document discusses the addition of a 100 psi (7 bar) pressure relief valve that should be plumbed external to the ViscoStar to protect it from damage resulting from accidental over pressurization.

Figure 1 shows the pressure relief valve plumbing. If the system pressure exceeds 100 psi, the fluid bypasses the ViscoStar and flows to waste. The presence of this valve makes an insignificant change to the collected data and the instrument still meets all Wyatt Technology performance specs. The blue banded tubes have 0.25 mm ID and are pre-bent for connection between a HELEOS and a ViscoStar as shown in Figure 2. The remaining tubes have an ID of 0.75 mm and should be plumbed to waste. If the instrument stack-up does not include a HELEOS, one should remove the upper tubing and plumb the fluid inlet directly to the three port union.



**Figure 1. Pressure Relief valve.**



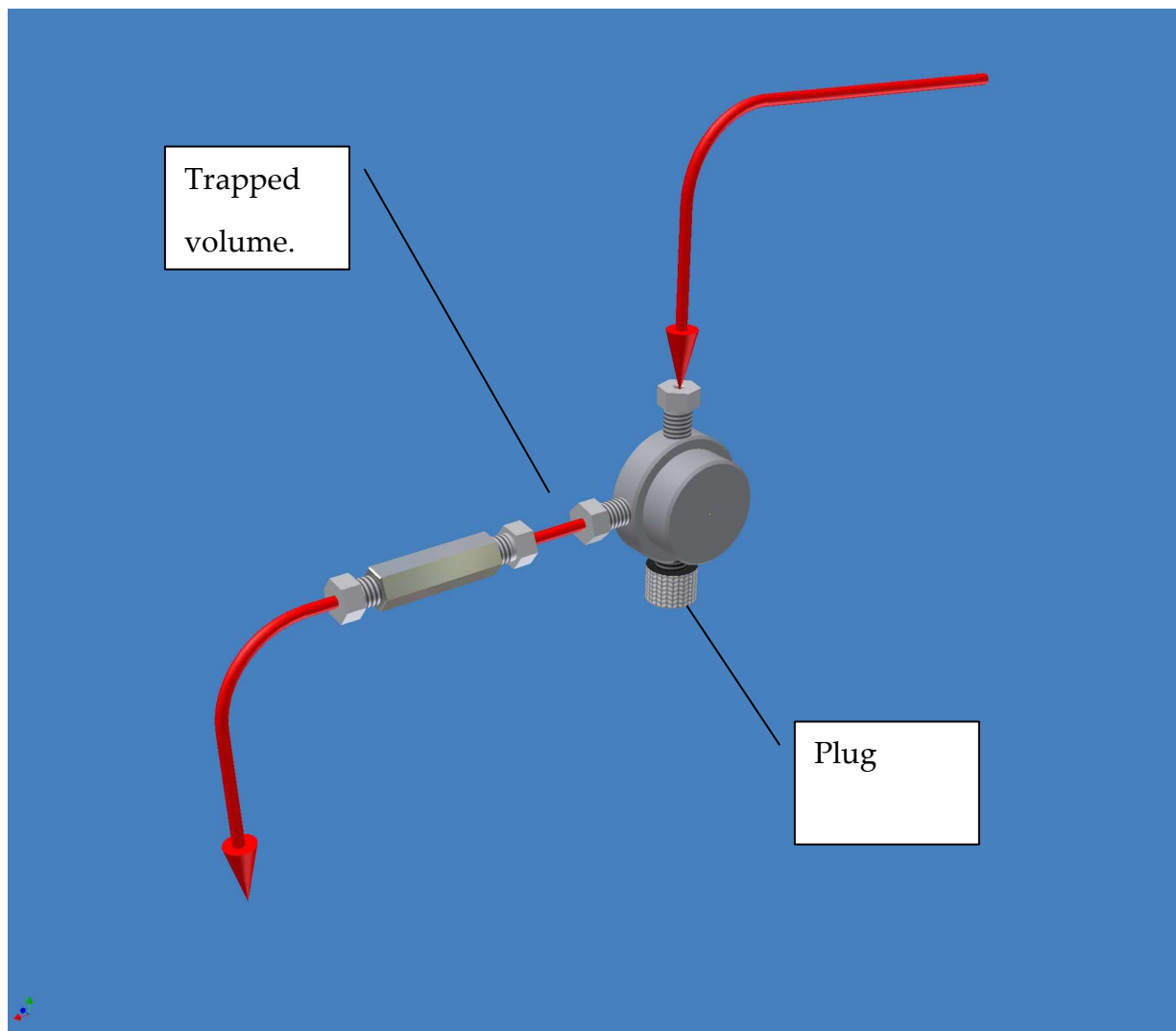
**Figure 2. Instrument stack up and plumbing of ViscoStar Relief valve**

## Operation

The ViscoStar operation is unchanged with the relief valve connected. However, the fluid change procedure is modified. When the working solvent is changed, one must first purge the trapped fluid within the pressure relief valve as shown in Figure 3. In this configuration the connection to the ViscoStar is disconnected, and the union is plugged so that the fluid will flow through the relief valve and flush out the trapped volume. Then the system can be replumbed to the ViscoStar and the solvent change procedure can be followed as usual. If, at any time bubbles are accidentally introduced into the fluid

stream, they may get into the trapped volume, affecting the system performance. If this occurs, simply repeat this procedure to flush out the trapped volume.

The pressure relief system introduces two new wetted materials to the system. The relief valve has an internal PEEK insert and glass filled Teflon ferrules. Neither material is in the sample flow path and should not affect the results. Although PEEK is known to swell in some organic solvents such as THF, the part in the relief valve is not structural and should not pose a leak hazard.



**Figure 3. Plumbing configuration for flushing relief valve.**