

PICARRO

Vaporizer A0211 Operation Diagram

Danthu Vu - 2011

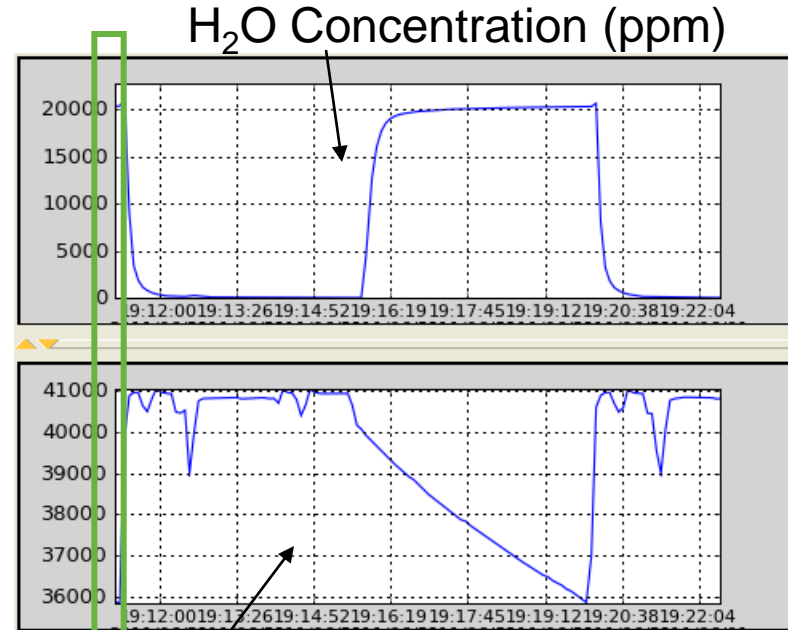
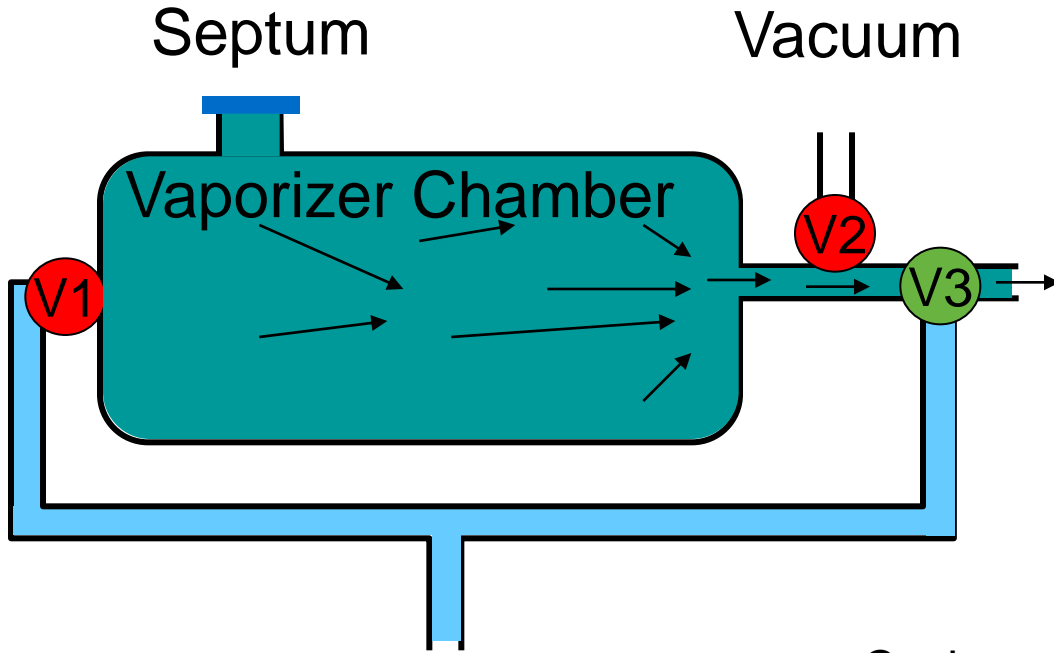


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Note: Some non-essential steps are skipped for simplicity

Vaporizer Sequence

End of previous cycle: deliver content to analyzer



Dry gas (N_2 /ZA)
2.5 PSI

● Valve - disabled

● Valve - actuated

Cavity outlet proportional valve position (a.u.)

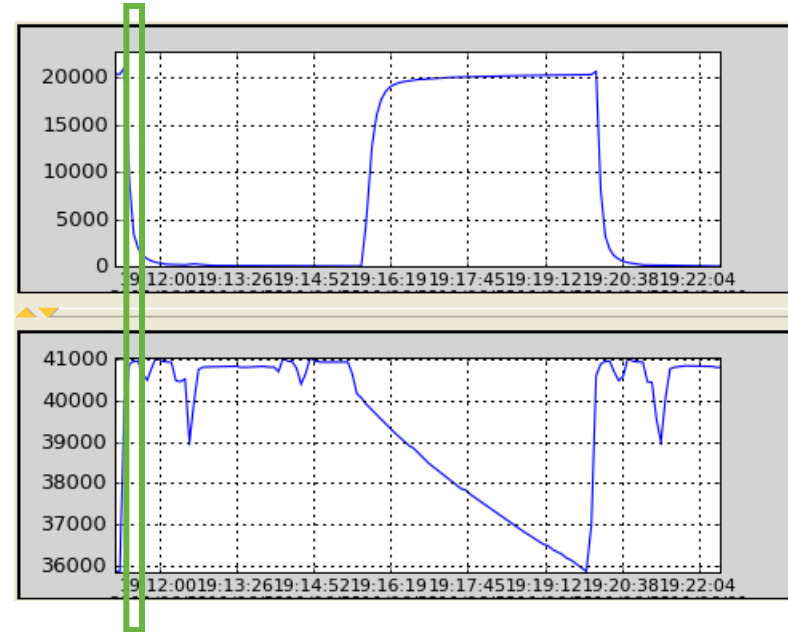
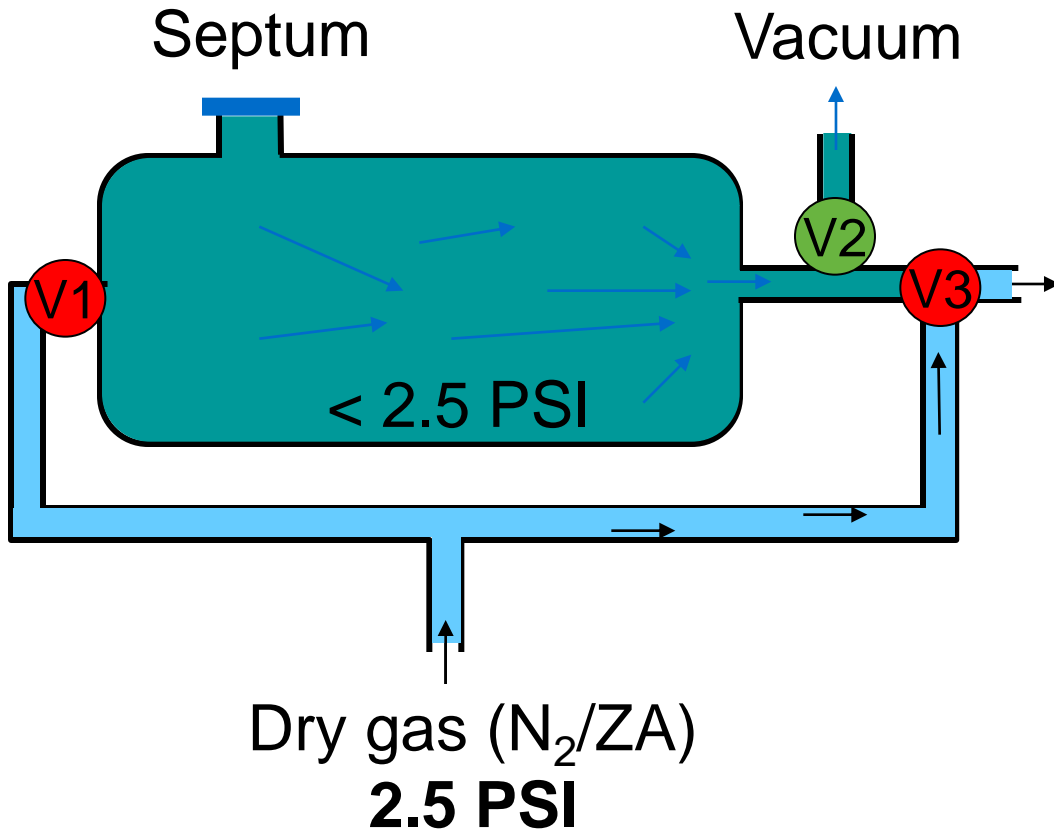
V1 & V2 are on/off

V3 is a 3-way

The “on” state connects the vaporizer chamber to the analyzer

Vaporizer Sequence

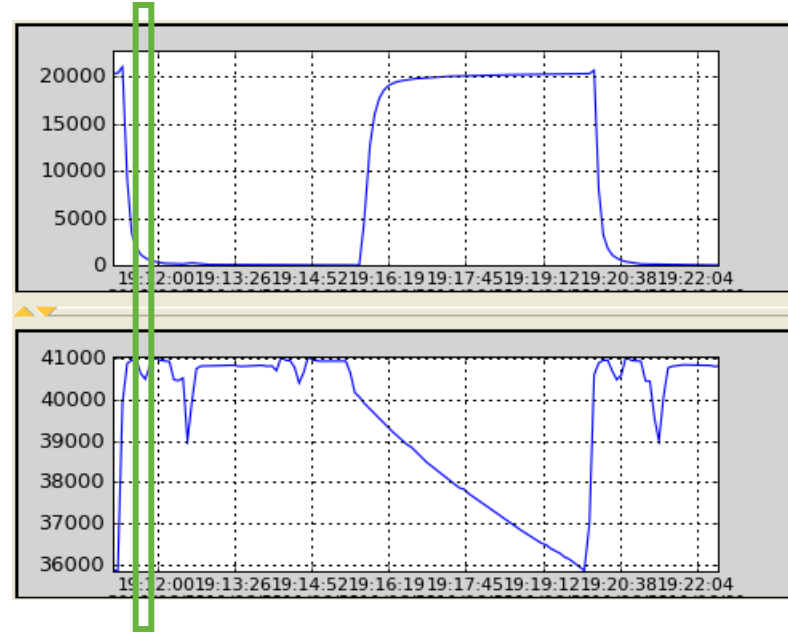
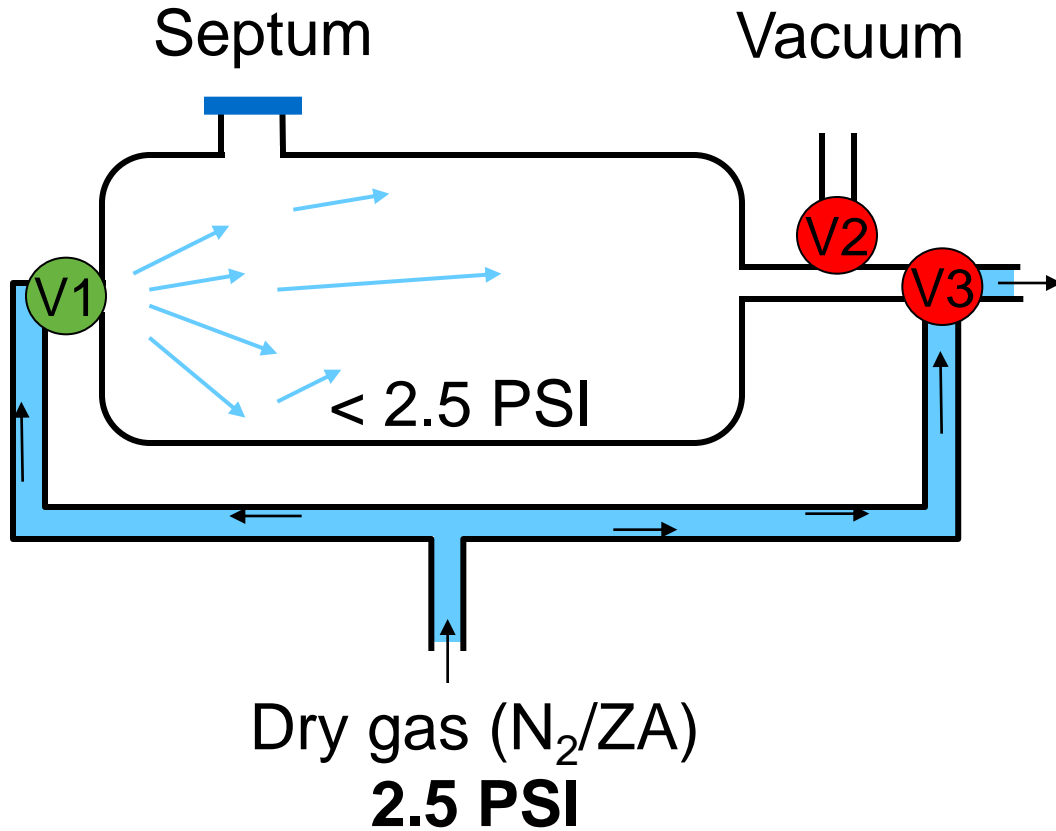
Wet Flush: vacuum out content of previous sample



When V3 is off, dry gas cylinder is connected to analyzer
(CRDS needs continuous flow)

Vaporizer Sequence

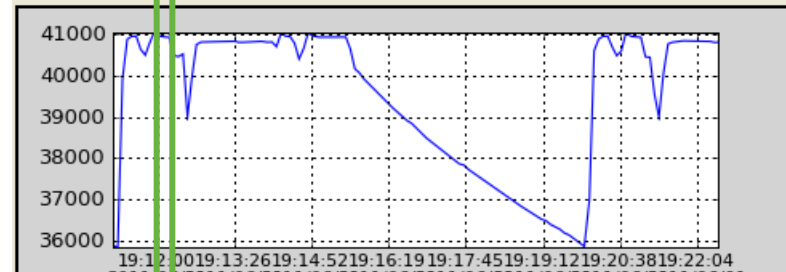
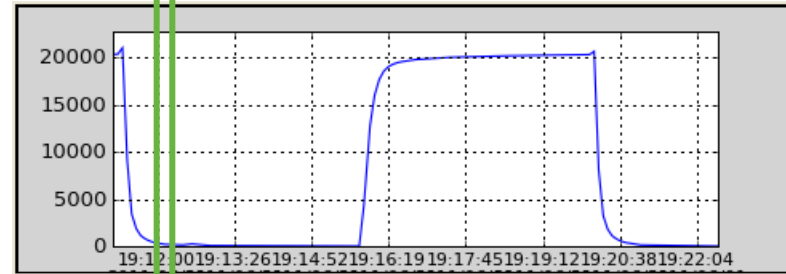
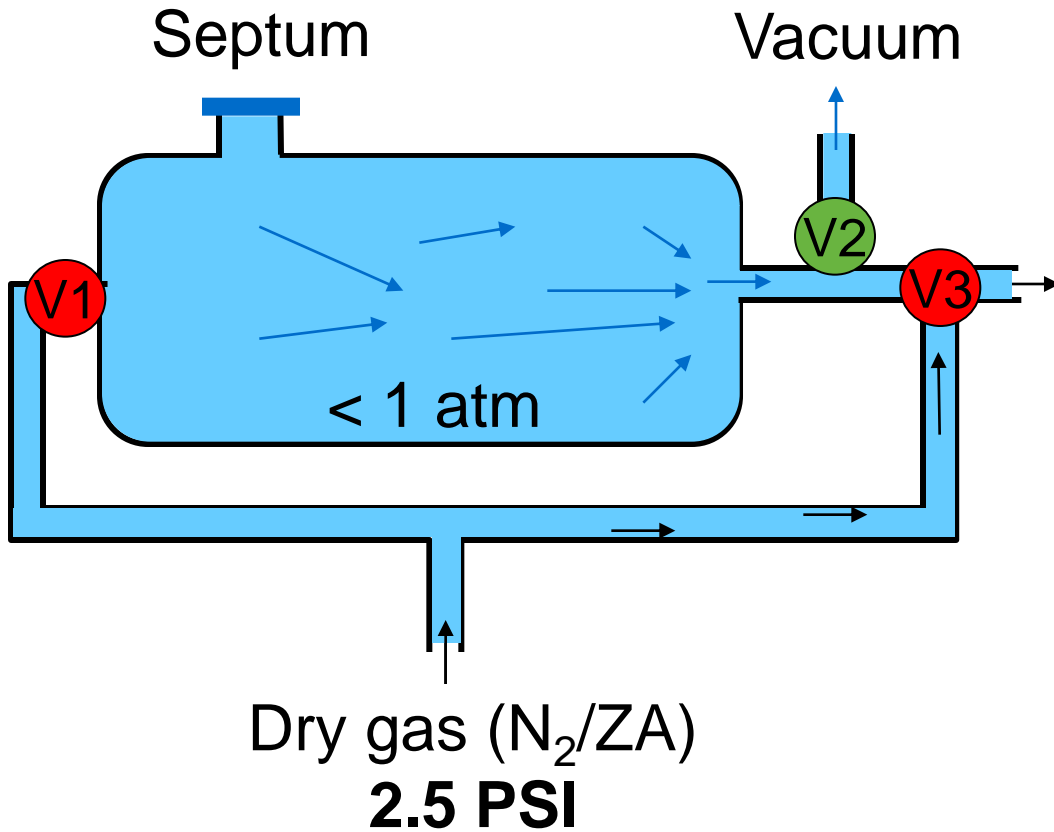
Dry Flush: fill vaporizer chamber with dry gas



Dry gas from cylinder is now going to both to the analyzer and the vaporizer chamber

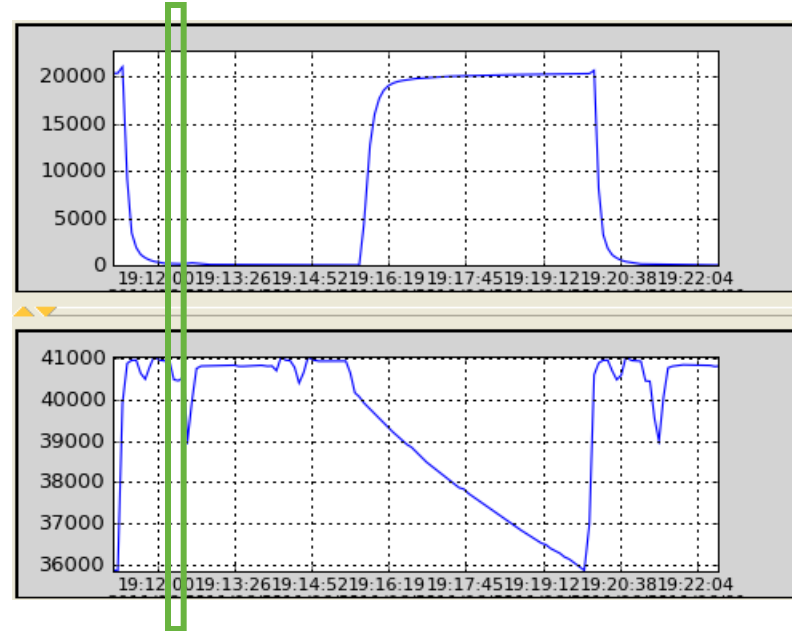
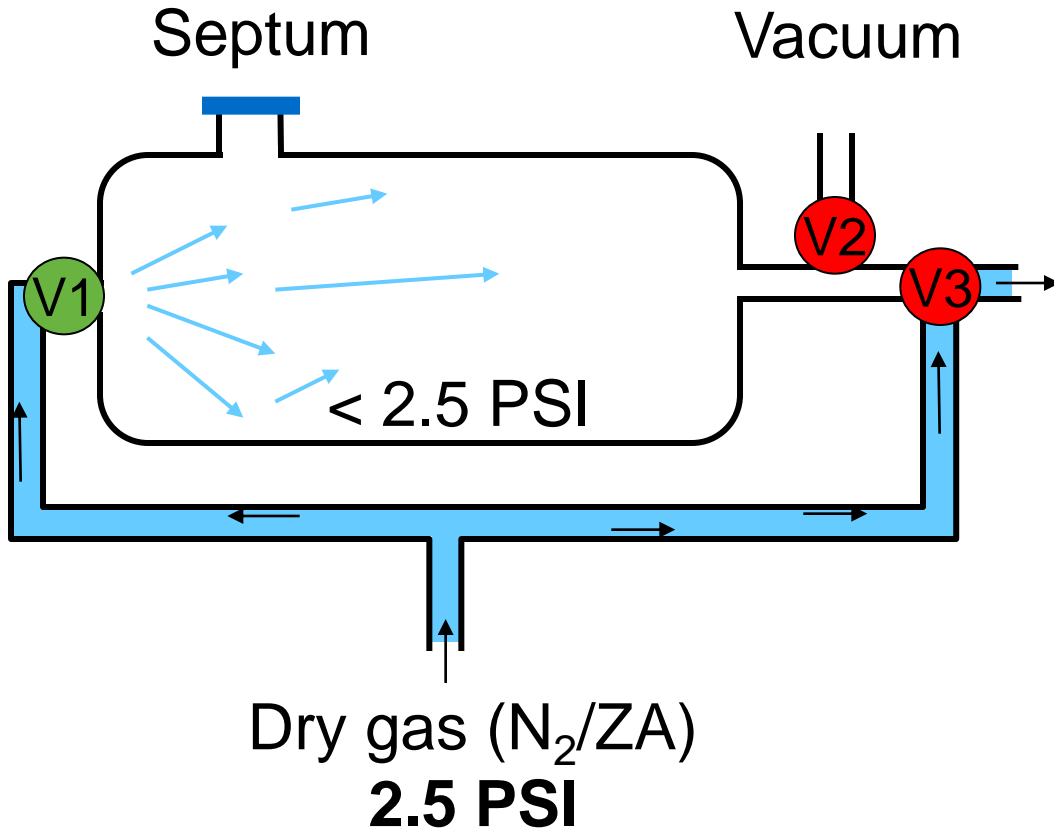
Vaporizer Sequence

Dry Flush: vacuum out content through vaporizer pump



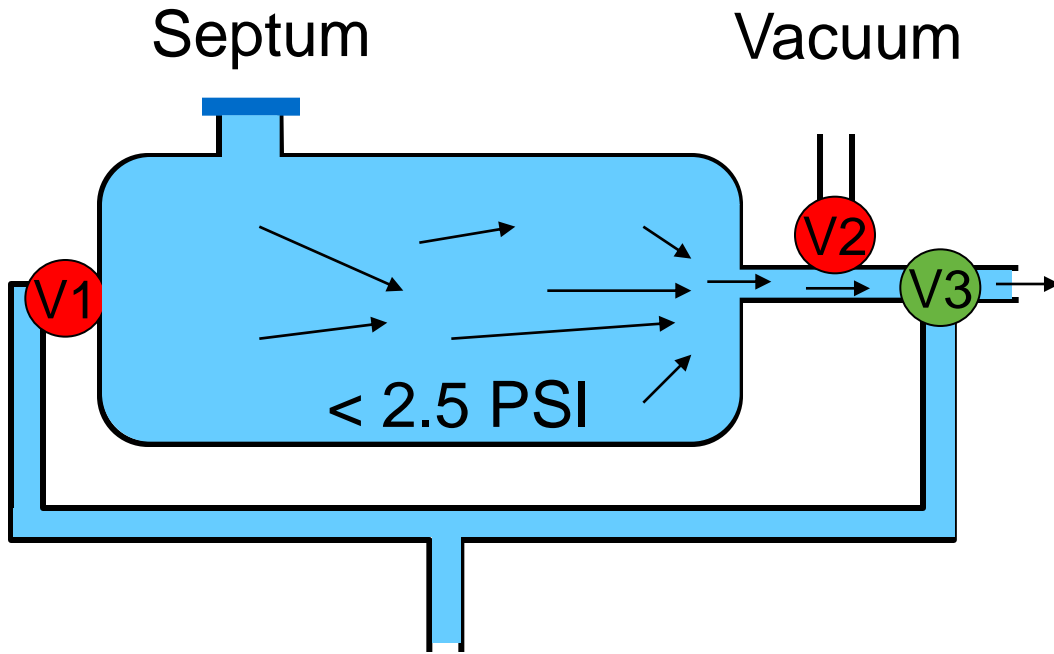
Vaporizer Sequence

Dry Flush 2: fill vaporizer chamber with dry gas

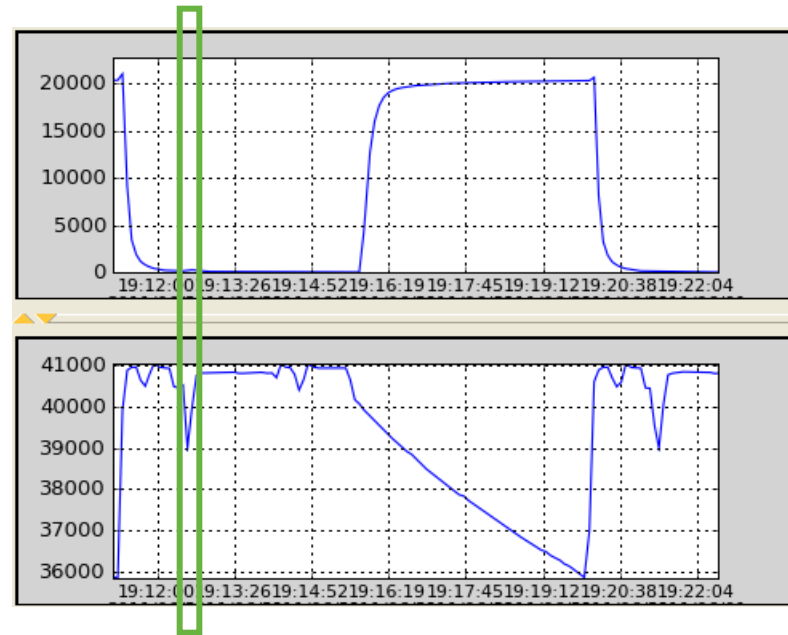


Vaporizer Sequence

Dry Flush 2: vacuum out content through analyzer chamber



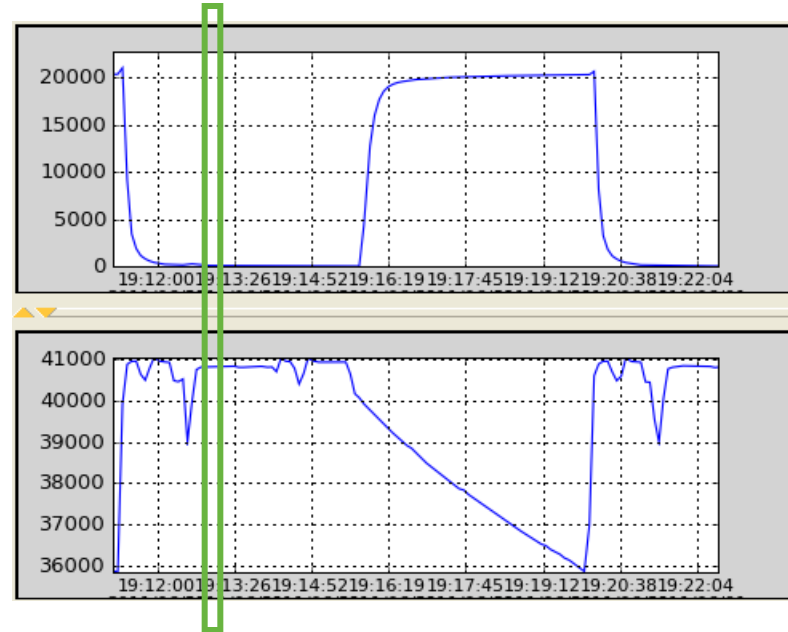
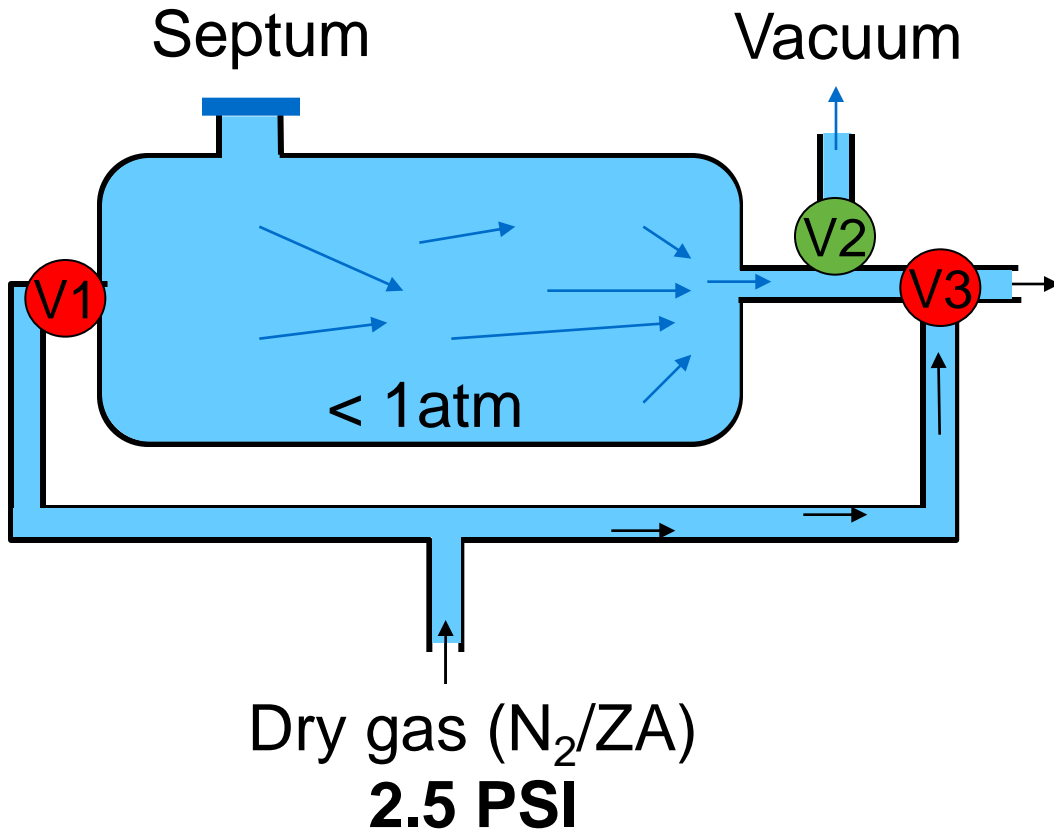
Dry gas (N_2 /ZA)
2.5 PSI



This stage is useful for
diagnosing the
vaporizer vacuum pump

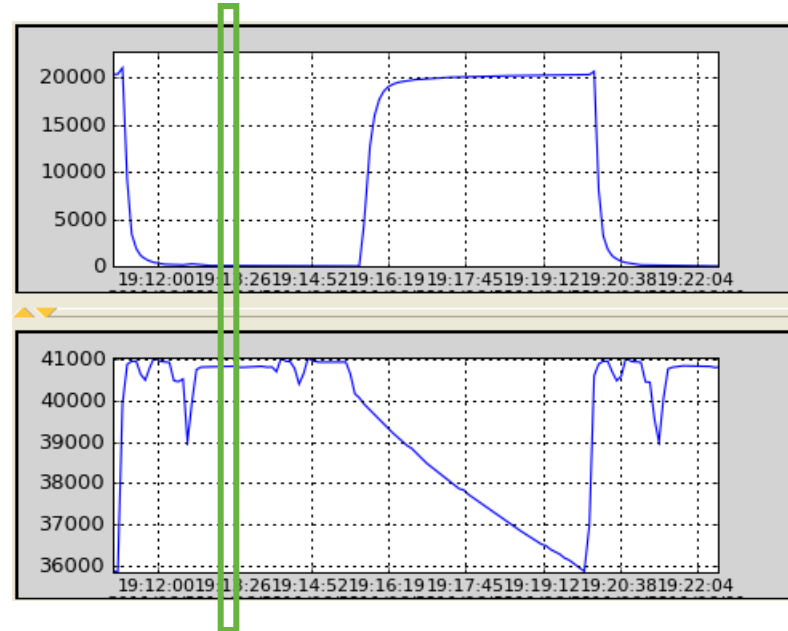
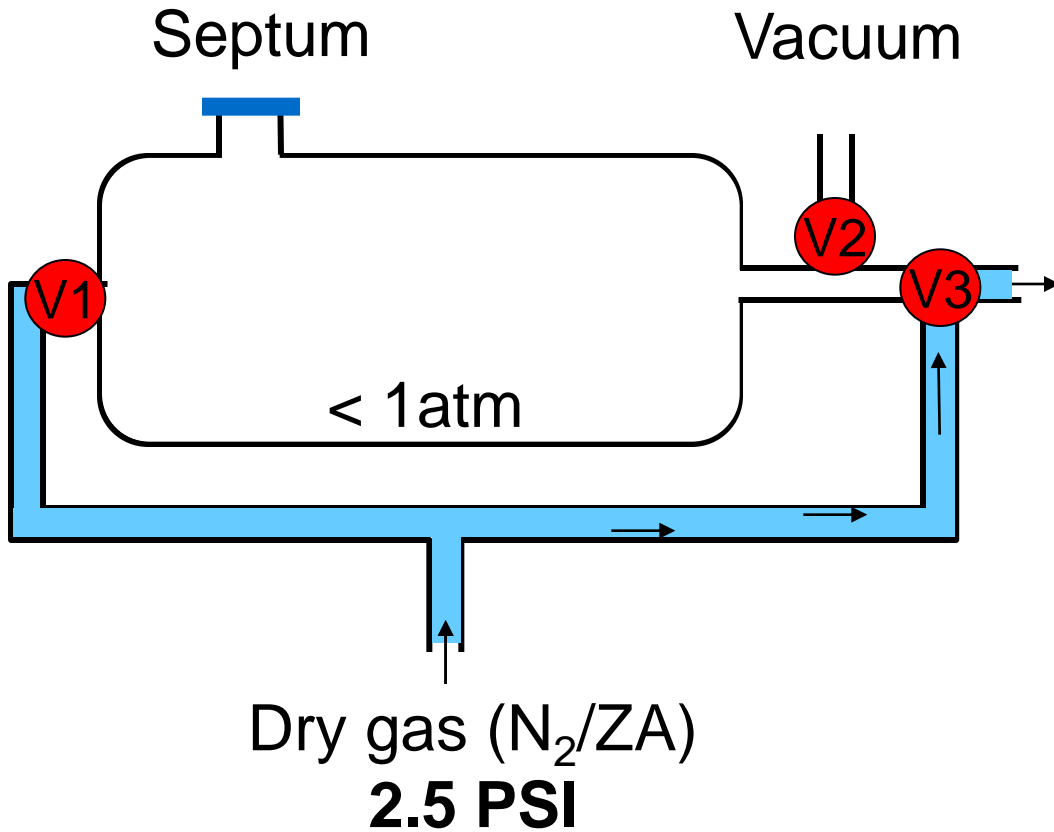
Vaporizer Sequence

Dry Flush 2: vacuum out content through vaporizer pump



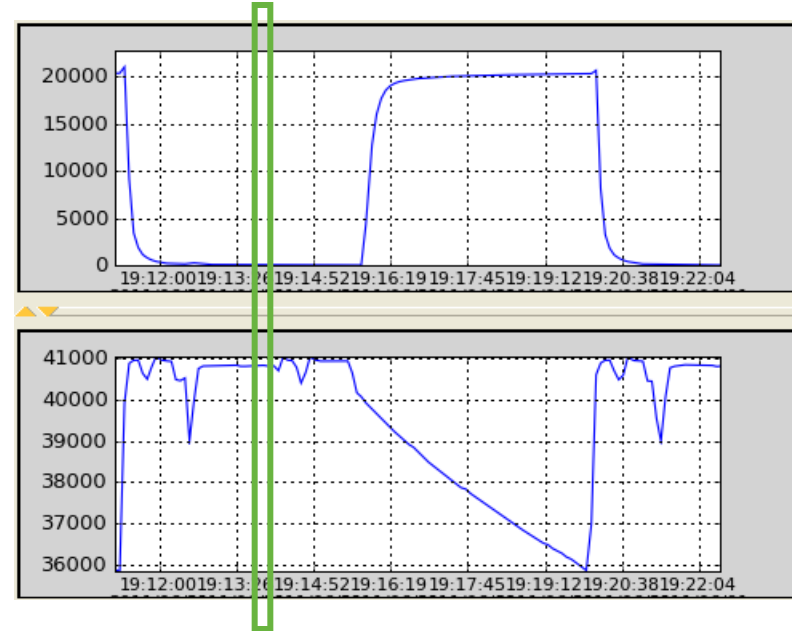
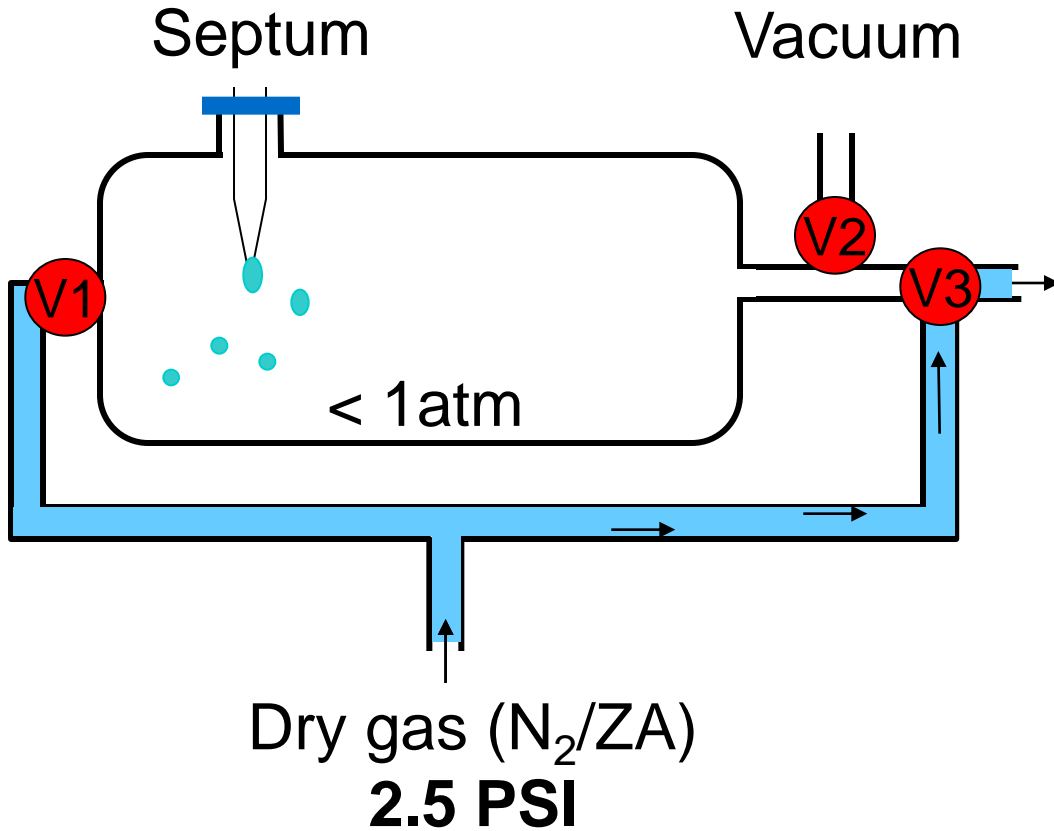
Vaporizer Sequence

Stay under vacuum waiting for liquid injection



Vaporizer Sequence

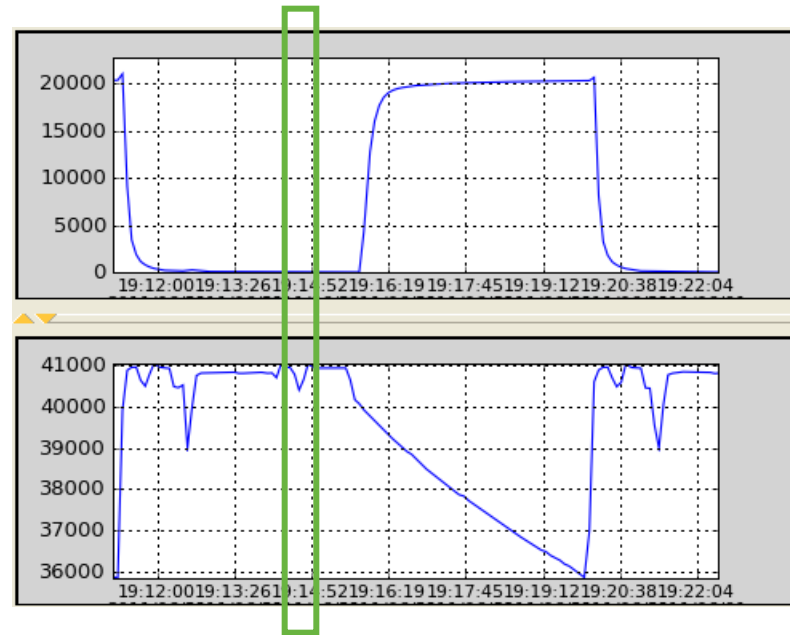
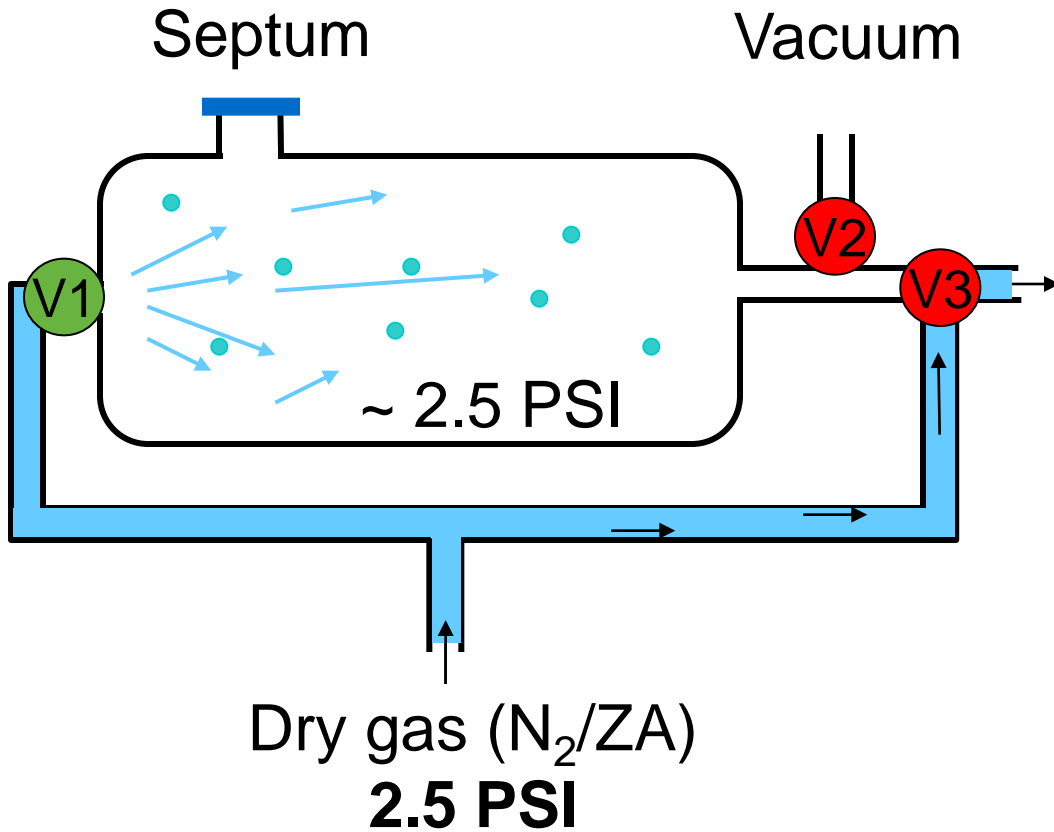
Liquid Injection Received



Inject water sample

Vaporizer Sequence

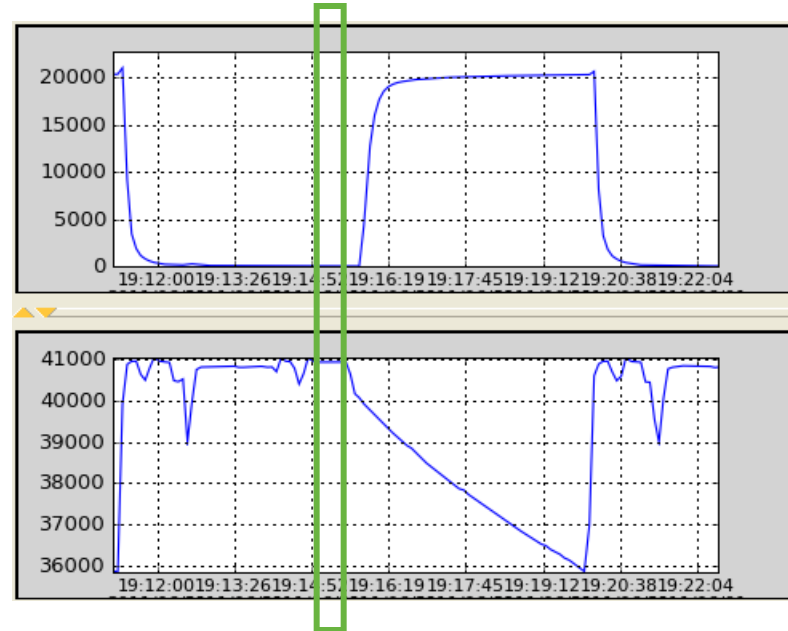
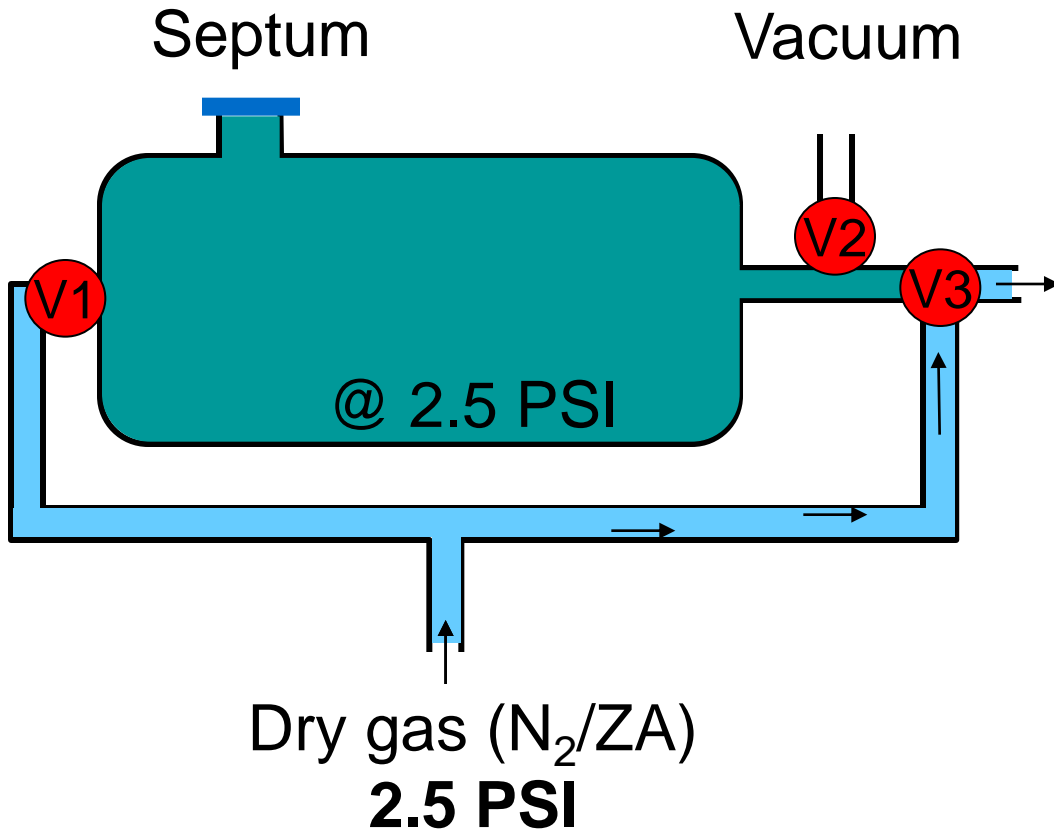
Fill vaporizer chamber with 2.5 PSI of dry gas



Liquid volume injected
+ pressure of input dry
gas determines the h₂o
concentration

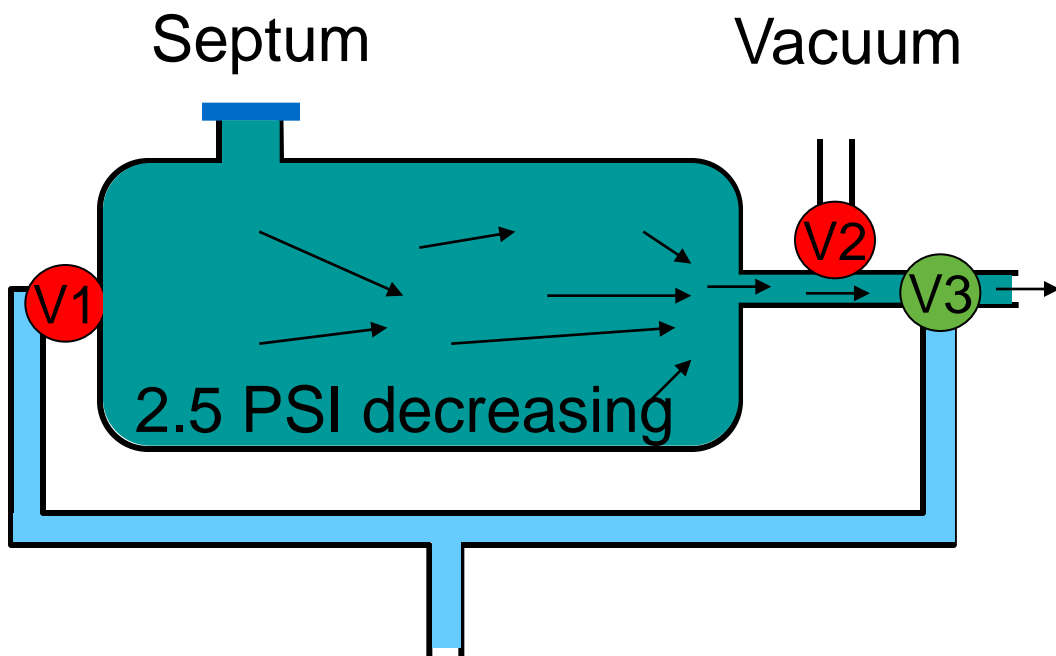
Vaporizer Sequence

Vaporizer chamber closed off for content to equilibrate

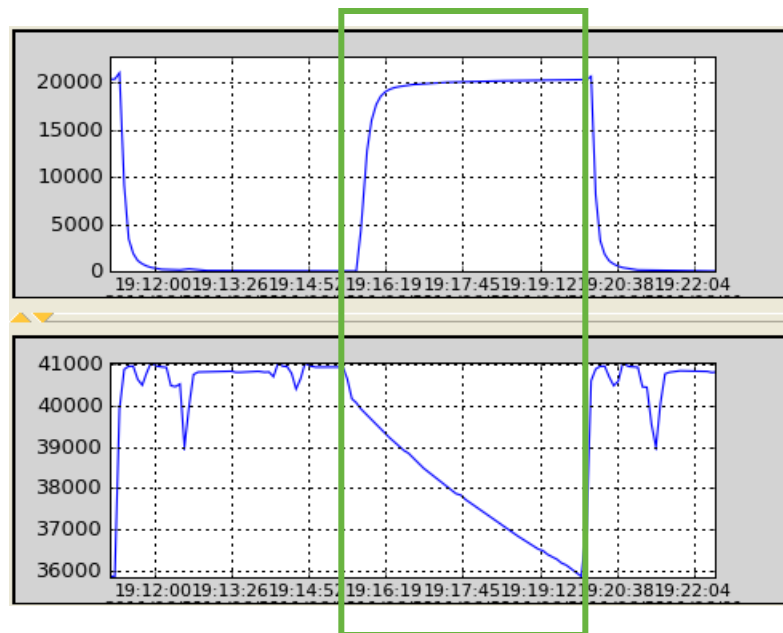


Vaporizer Sequence

Deliver vaporizer chamber content to analyzer



Dry gas (N_2 /ZA)
2.5 PSI



Analysis period

HT: 2.5 min /HP: 4.5 min

Note: outlet valve decreasing
indicates pressure inside vaporizer
chamber decreasing