

## SegreTECH Operation Procedure

### Emptying Sand

Sweet / Sour: <b>SOUR</b>	Isolation: <b>YES</b>	De-Pressure: <b>YES</b>	Scales: <b>YES</b>
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#### Objective:

Empty sand from the isolated containment sphere while continuing to flow the well.

#### Safety Hazards:

Pressurized Equipment; Potential Exposure to Hydrogen Sulfide (H<sub>2</sub>S).

### CONTAINMENT SPHERE EMPTYING PROCEDURE – SCALE EQUIPPED UNITS

NOTE: If the sand separator has been equipped with scales, it will also be equipped with a local digital display showing both the weight of the containment sphere and the mV reading from the scales.

#### Procedure Steps

1. **INDICATION** - Using the weight indicator on the PD8, determine if the Containment Sphere is full of sand and ready to be emptied. Typically, the unit is emptied when the weight reaches 300 kg (660 lbs) or more but this will vary between customers. ***Consult your company's policies and procedures to determine maximum weight.***

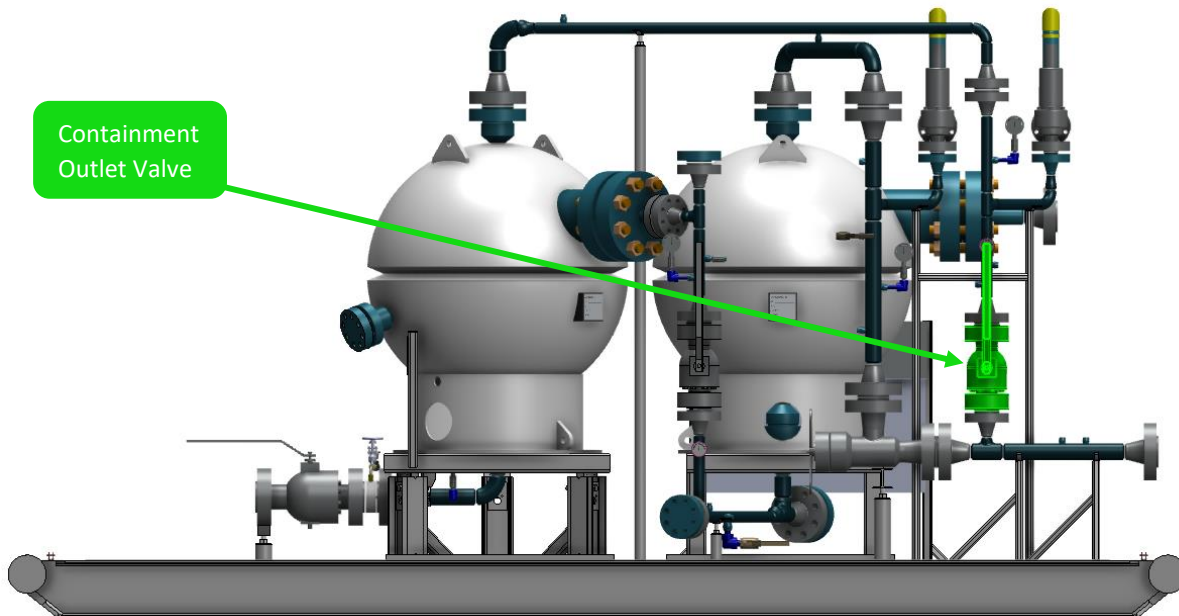
#### PD8 Display



The top line represents sand weight (lb or kg).

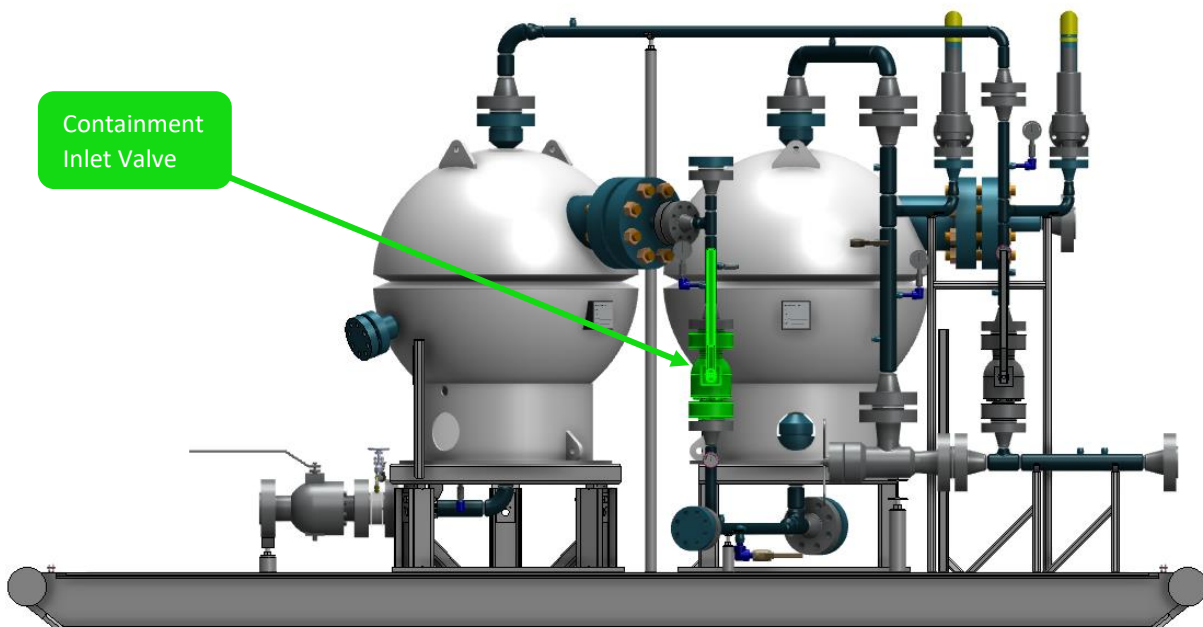
The bottom line shows the total mV from the load sensing pins.

2. **ISOLATION** - Close the Containment Outlet Valve (2" Plug Valve).



*(NOTE: Unit shown above may not be identical to actual unit in the field. Buildings not shown for clarity)*

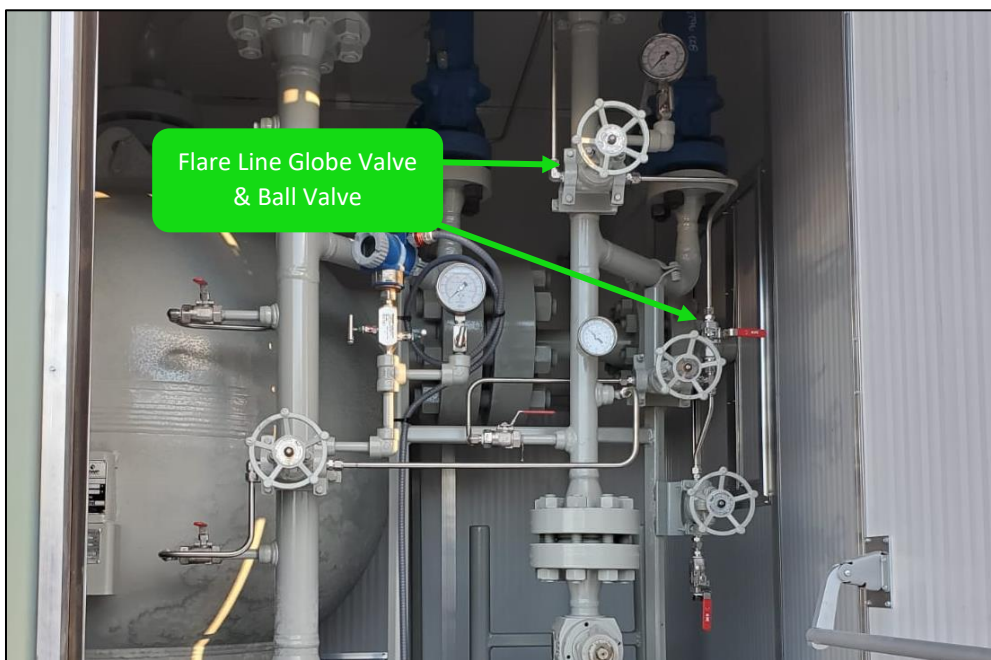
3. **ISOLATION (continued)** - Wait approx. 20 seconds then close the Containment Inlet Valve (2" Plug Valve), trapping the sand, fluid and gas in the Containment Sphere.



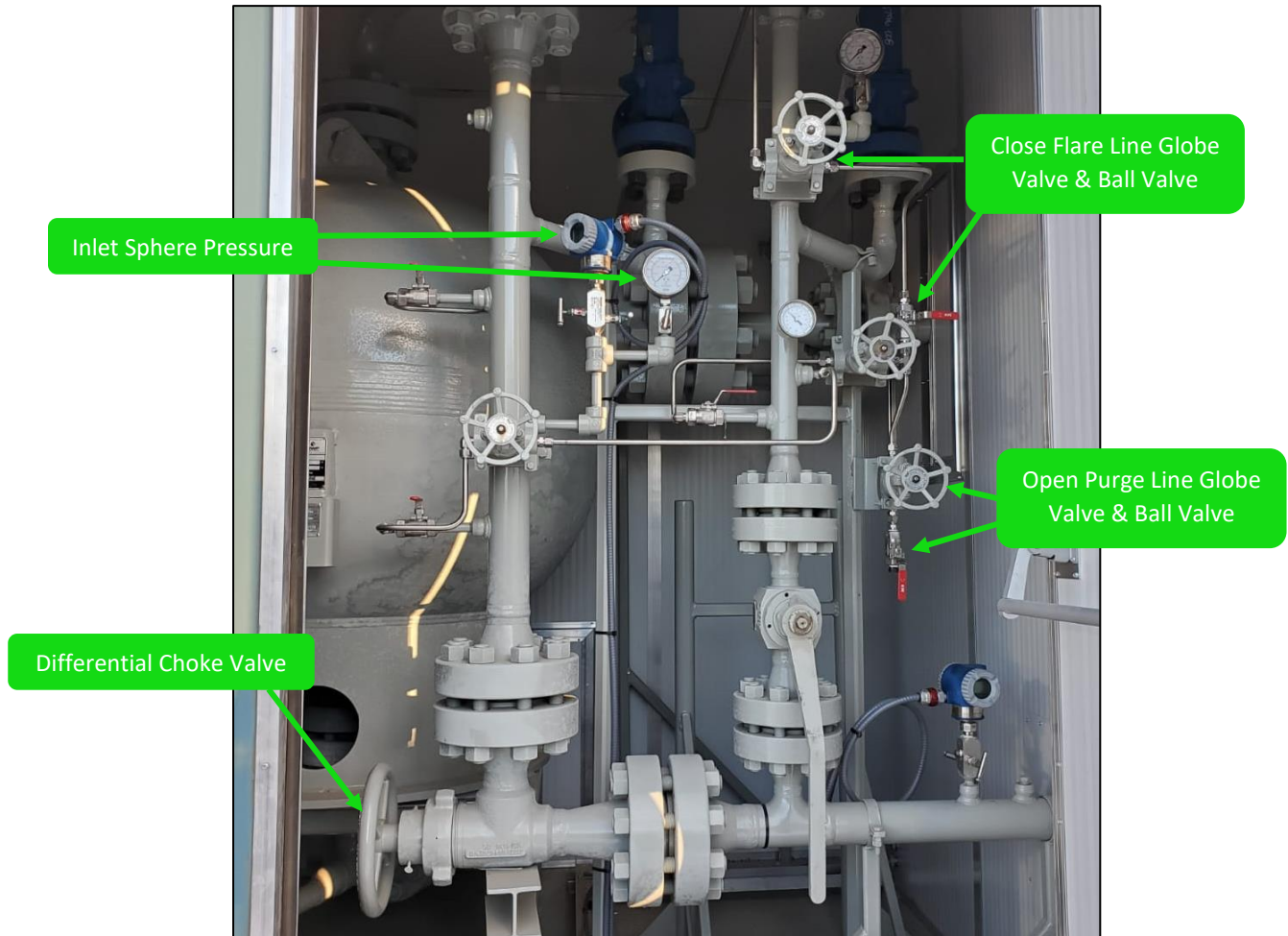
4. **DE-PRESSURIZATION** - Open the De-pressure Line ½" ball valve then slowly open the De-pressure Line ½" globe valve.



5. **DE-PRESSURIZATION (continued)** - Open the Flare Line ½" ball valve then slowly open the Flare Line ½" globe valve. Bleed the line down to zero. **NOTE – Opening the valve too fast will result in liquids being pulled from the Containment Sphere.**

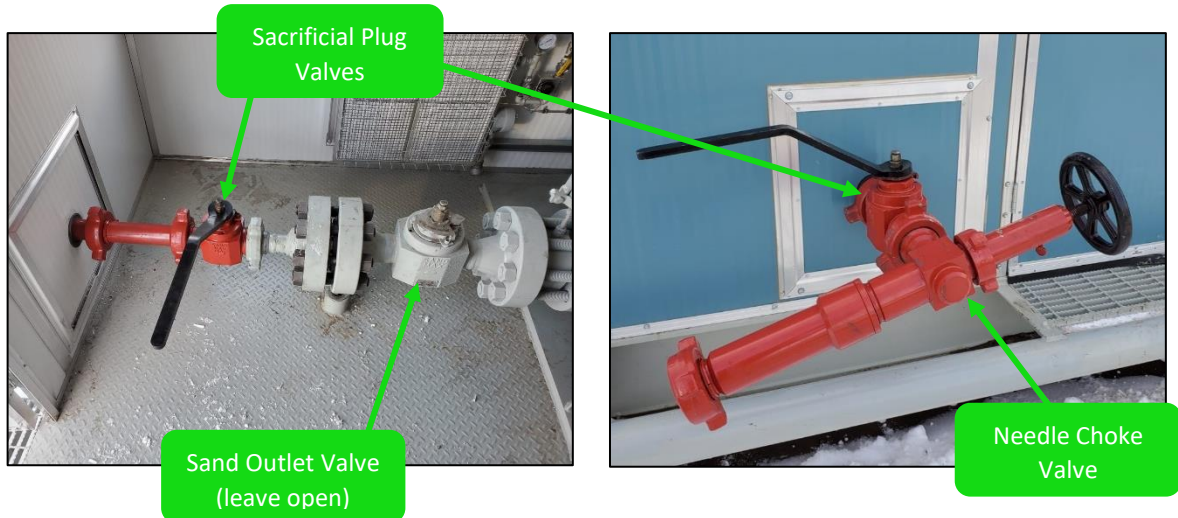


- PURGE** - Once the containment sphere and associated piping have been depressurized, close the Flare Line ½" ball valve and Flare Line ½" globe valve and open the Purge Line ½" ball valve. Then slowly open the Purge Line ½" globe valve until desired pressure is achieved (approximately 700kpa / 100 psi).

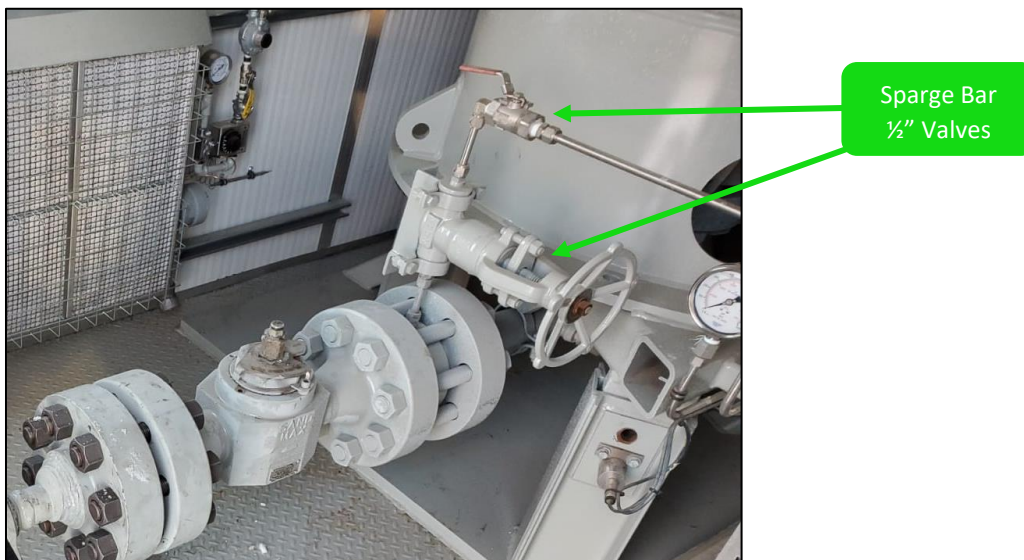


**OPERATIONAL NOTE:** During the sand emptying cycle, monitor the Inlet Sphere pressure to ensure it does not rise beyond an acceptable level. If the Inlet Sphere pressure rises beyond an acceptable level, note the Differential Choke Valve setting and open the choke to relieve the pressure. Once the dump cycle is complete and the Containment Inlet Valve has been opened, return the choke valve to the noted setting.

7. **EMPTYING SAND** - Slowly open the sacrificial plug valves to the fully open position. Then, slowly open the outside needle choke valve, allowing sand to flow from the Containment Sphere to the tank or vacuum truck.

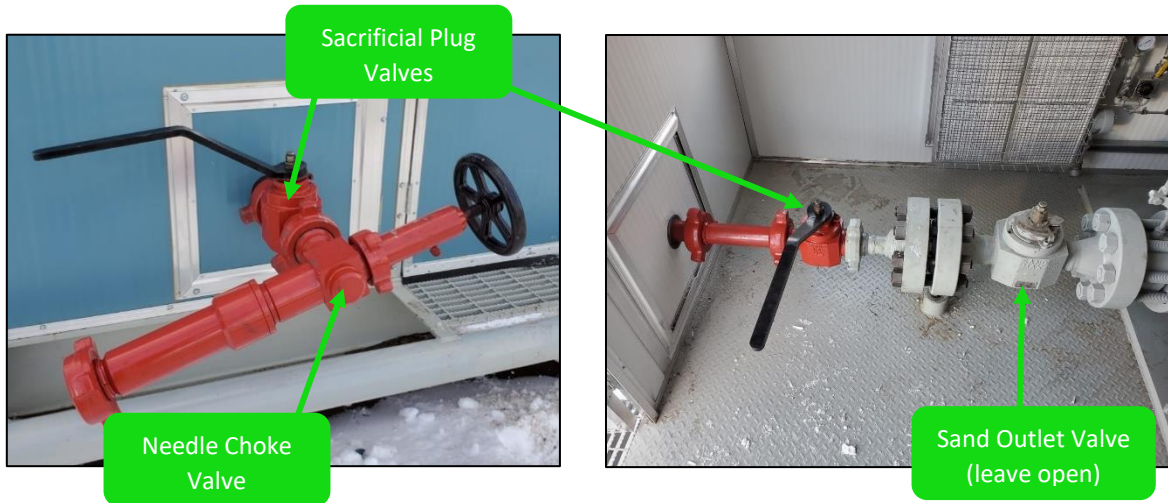


- \*\* NOTE:** If the sand will not flow, close the needle choke valve and open the ½" ball valve and ½" globe valve located directly upstream of the Sand Outlet Valve. This will activate the sparge bar (sand agitation line) and loosen any packed sand. Wait 20-30 seconds, then close the globe valve then ball valve and re-open the needle choke valve.

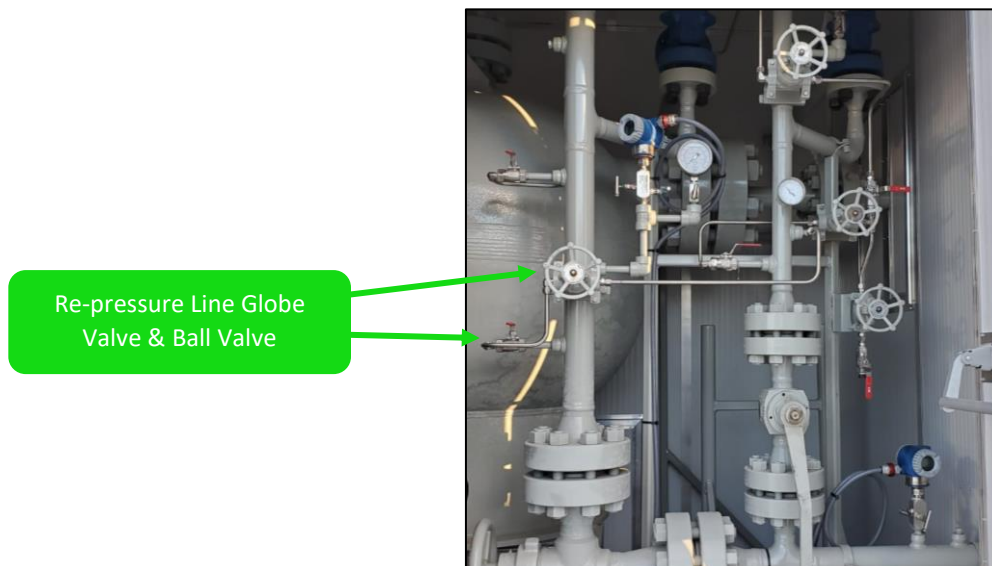


8. **EMPTYING SAND (continued)** - Listen for sand flow as the sand is being emptied from the unit. **NOTE:** There is an audible difference through the needle choke valve between sand flow and liquid flow, both in sound volume and type.

9. **FINISH EMPTYING SAND** - When the sand flow changes to liquid flow, close the needle choke valve, then close the sacrificial plug valve on the outside of the building and inside of the building. The SegreTECH Sand Outlet Valve should remain open.

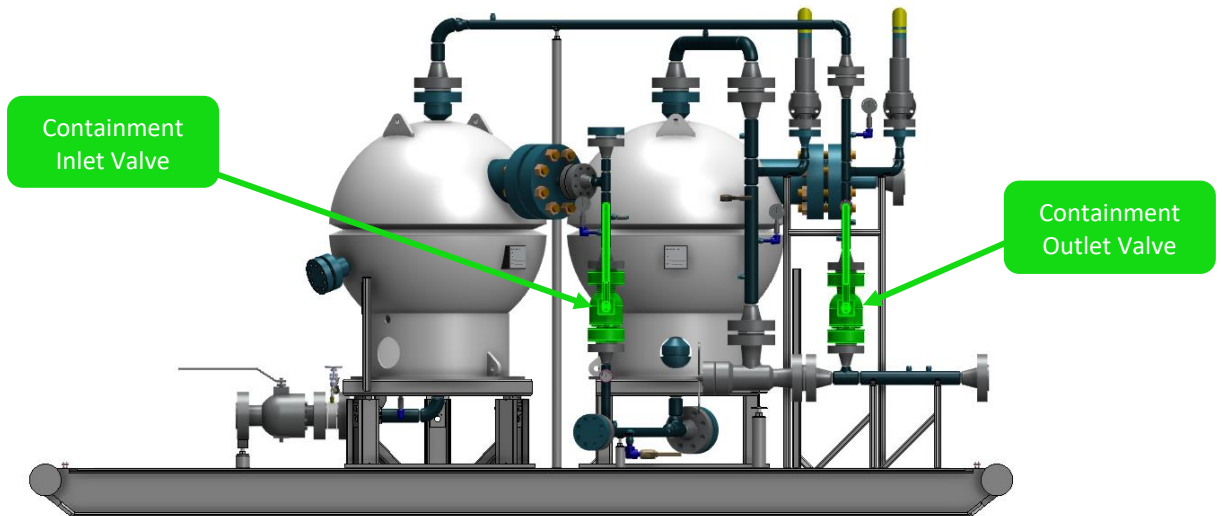


10. **FREEZE PROTECTION** - With the inside plug valve closed, open the outside plug valve and needle choke valve to bleed the pressure and drain the external piping, then close both valves again.
11. **RE-PRESSURIZATION** - Re-pressurize the isolated Containment Sphere by opening the ½" Re-pressure line ball valve and then the ½" globe valve downstream of it.



12. **RE-PRESSURIZATION (continued)** - When the Containment Sphere pressure gets within approximately 350 kPa (50 psi) of the Inlet Sphere, close the re-pressure line globe and ball valves and with a slow continuous motion, open the Containment Inlet Valve to allow the flow of sand and water between the two spheres.

**13. RETURN TO OPERATION** - Slowly and continuously open the Containment Outlet Valve to commence flow thru the entire system.



**14. PRESSURE VERIFICATION** - Once the system has stabilized flow, double check to ensure that there is a minimum of 70 - 140 kPa (10 - 20 psi) pressure differential between the 2 vessels. (The Inlet Sphere gauge should show the higher pressure and the Containment Sphere gauge should show the lower pressure.)