

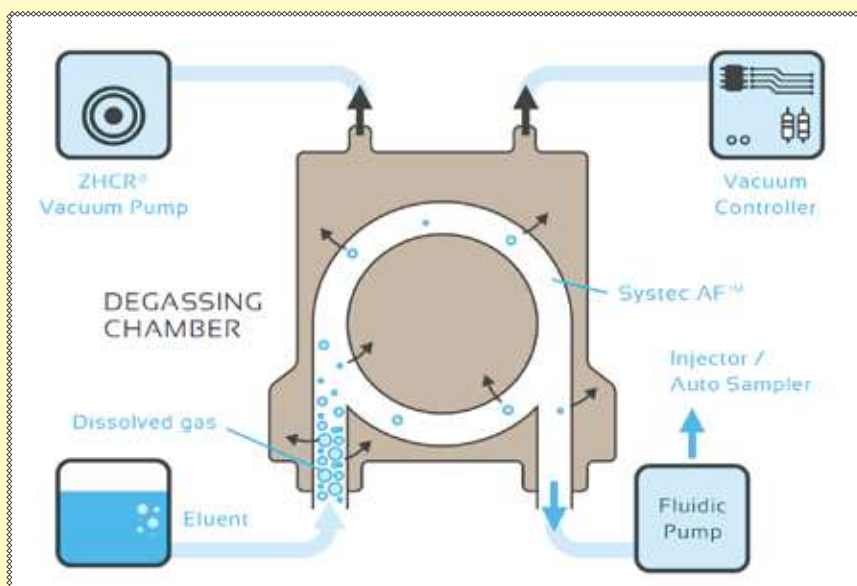
GET RID OF DISSOLVED GASSES WITH OUR DEGASi[®]-LINE

The critical component of the vacuum degasser is a short length of Systec AF™ tubing through which the solvent flows. This tubing is located in a chamber where a partial vacuum is maintained by a vacuum pump that is constantly running at a low speed. Dissolved gasses migrate across the tubing wall under a concentration gradient produced by the vacuum as the solvent flows within the tubing in accordance with Henry's law. The gasses are expelled from the system and the chamber is maintained at a constant, preset vacuum level by varying the vacuum pump speed as needed. A special

port in the vacuum pump continually flushes the pump head with a small "bleed" of air to remove any solvent vapors which may enter the pump from the vacuum chamber. This air bleed eliminates the need for any solenoid valves within the system. This patented design results in zero vacuum "hysteresis".

It is not necessary to totally eliminate the dissolved gas, it only needs to be reduced to a concentration that is below the saturation point of the mixture. Typically, ~50% must be removed.

DEGASSING EXPLAINED



THE PRINCIPLE OF OUR DEGASi[®]-LINE

Dissolved gasses are actively removed from a flowing liquid stream by vacuum via the Systec AF™ membrane.

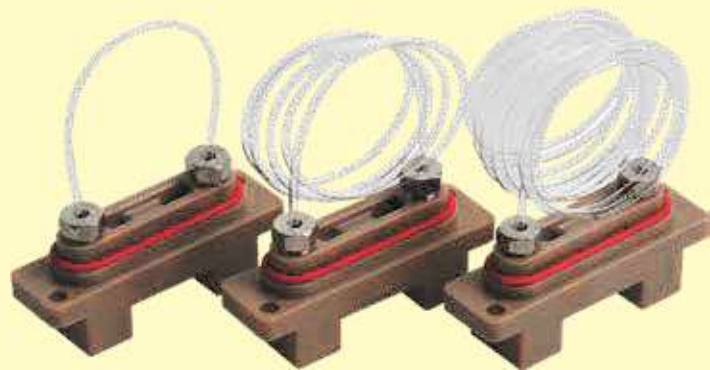
THE DEGASSING CHAMBER THE HEART OF OUR DEGASi®-LINE

THE SECRET REVEALED

The Systec AF™ membrane is an essential part of the degassing process. Systec AF™ consists of an amorphous perfluorinated copolymer. Through the highly permeable membrane the dissolved gasses are removed, by applying vacuum on the outside of the membrane, while the liquid stays on the inside.

The flow path is inert and most of our different degassing chambers have a biocompatible flow path. Every vacuum chamber is manufactured with the highest quality and tested individually to ensure top-of-the-line performance.

Depending on your needs regarding conditions such as type of solvents and flow rates, we can help you determine the size of the vacuum chamber that will be optimal for your application.



INCREASE THE QUALITY USING SYSTEC® ZHCR AND SYSTEC AF™

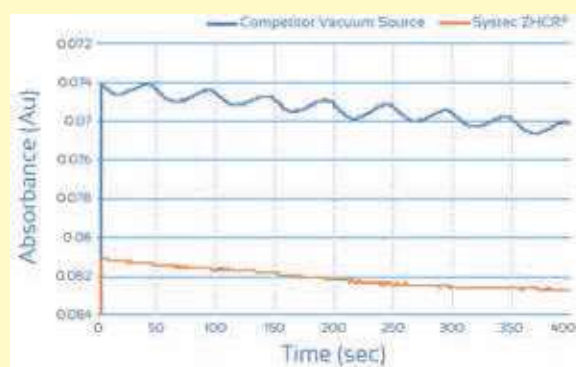


SYSTEC® ZHCR VACUUM PUMP

Introducing the ZHCR® (Zero Hysteresis Constant Run) stepper motor driven vacuum pump, designed and developed for membrane degassing of HPLC mobile phase and other fluids used in Analytical Instrumentation.

Employing a micro-stepping closed loop vacuum control strategy permits the pump to maintain a constant vacuum level set-point* by varying the RPM of the stepper motor. The pump initially runs at a high speed which provides for a quick pull down and, as it approaches the vacuum control point, the RPM is gradually reduced until the desired vacuum level is reached. This patented control strategy allows the On-Line Degasser to maintain a virtually constant vacuum that is unaffected by varying degassing loads. As a consequence, fluctuations in baseline due to vacuum hysteresis are eliminated by not having the pump repeatedly stop and start as is done in many older and existing systems.

*50 mmHG for most models and 80 mmHG for Prep



Typical Degassing Fluctuations from Vacuum Sources

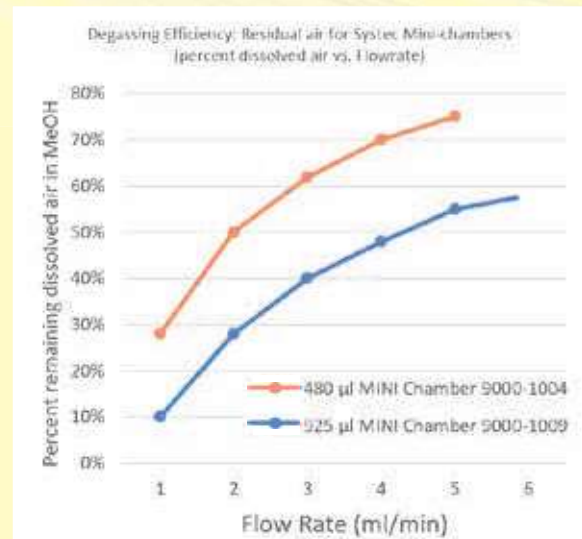
Fluctuations in detector baseline of a single-speed pump compared to the patented technology of the Systec ZHCR® pump.* UV detector baseline fluctuations are minimal when compared to traditional stop and start vacuum sources.

*Vacuum chamber consists of 285 μ l of Systec AF™ tubing: flow rate is 1 ml/min, eluent is methanol; wavelength is 215 nm.

SYSTEC AF™ MEMBRANE

The new Systec AF™ membrane is 50x more permeable and outperforms the older Teflon® PTFE membranes used in many other degassing systems today. This translates into the ability to use shorter tubing for removal of dissolved gasses.

- Ultra-high degassing efficiency
- Low volume
- Considerably shorter equilibration times
- Very easy to prime
- Short vacuum pull-down times, typically 30 seconds
- Single lumen design for consistent degassing
- Inert flow path
- Excellent chemical compatibility flow path
- Long lifetime



Plot shows remaining dissolved air in methanol using a selection of Systec Mini-Chambers*. The range of chambers and specifications offered provide ample solutions for system designs.

* Water and Methanol mixtures between 30 % and 70 % methanol will outgas when more than 38 % dissolved air remains in each of the solvents. Other water and organic mobile phases being mixed using a low pressure gradient system will undergo similar outgassing.