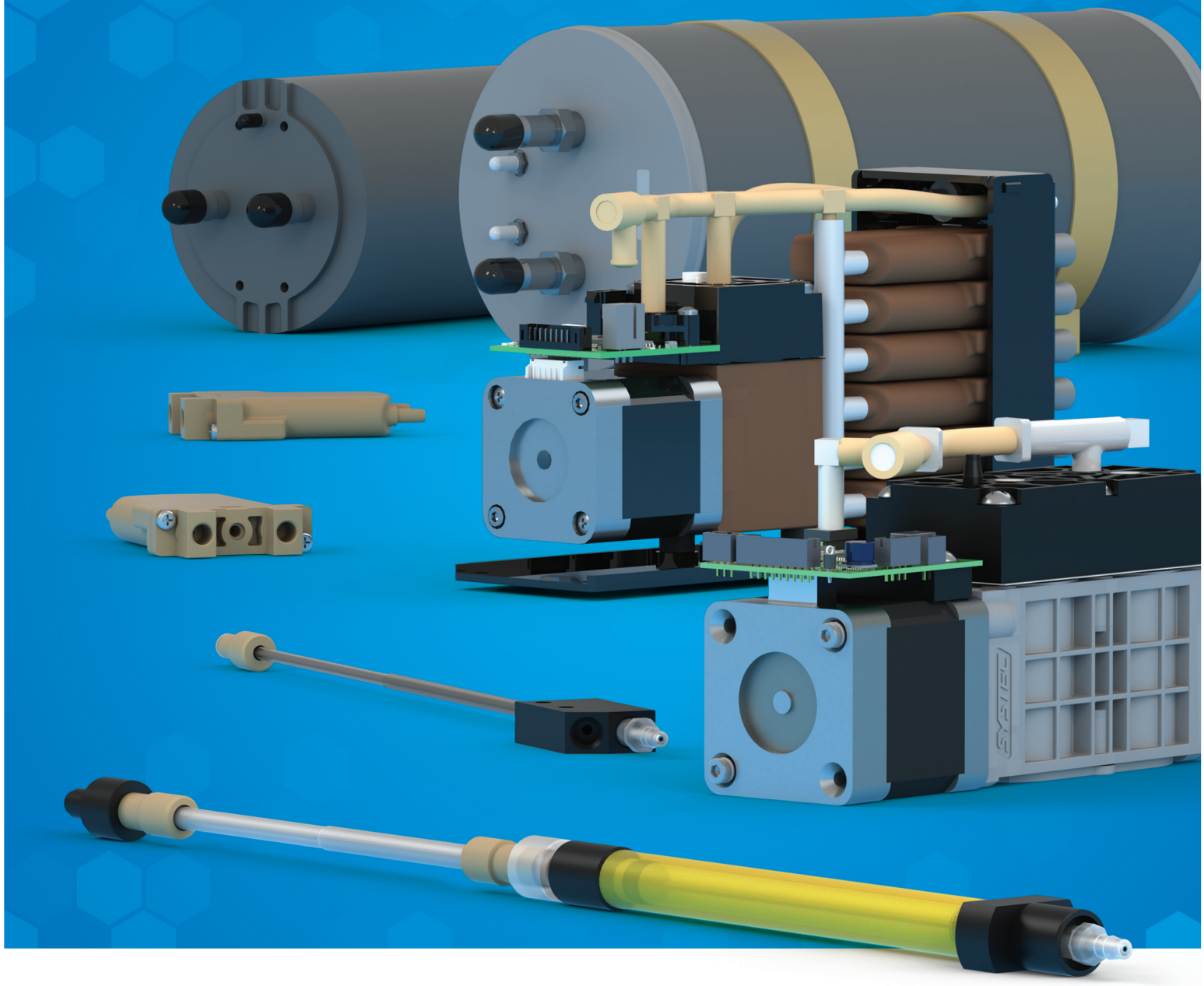
Degassing

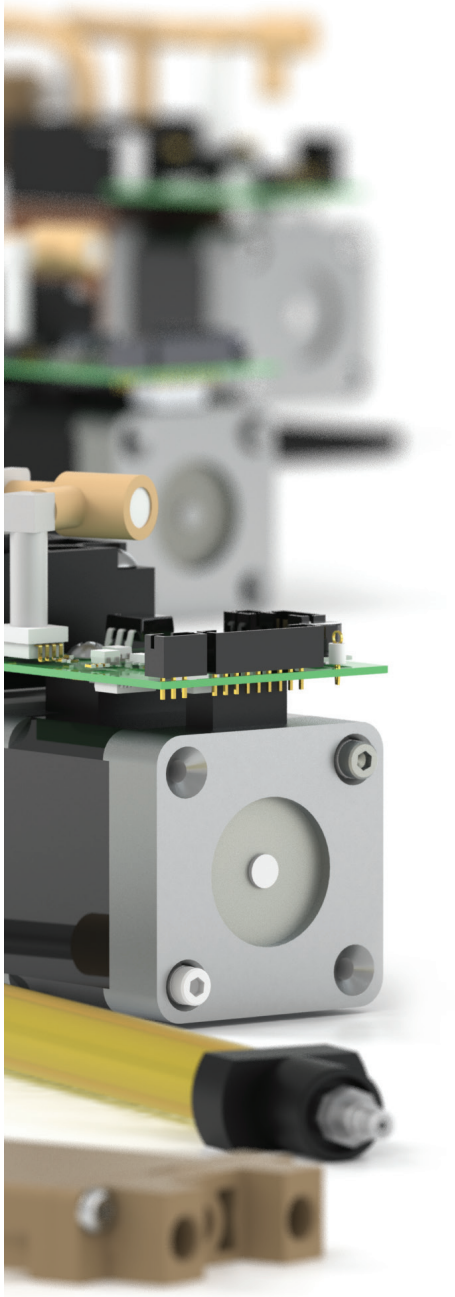


IDEX HEALTH & SCIENCE

Fluidics for Life™

Fluidic Connections | Valves | Pumps | Degassers | Column Hardware | Manifolds

Degassing Solutions



IDEX Health & Science degassers improve fluidic instrument precision and reliability by removing dissolved gases from fluids before they outgas and form problem-causing bubbles

We offer a broad portfolio of vacuum degassing assemblies to control bubbles in a wide range of system-fluids and flow-rates.

Degassing / Debubbling Membrane Materials

Widest Fluid Capability ❯❯❯ **Most Aqueous Based Capability**

AF

AF based degassers offer the widest range of chemical compatibility and are best used with non-water-based system fluids.

Silicone

Silicone based degassers offer high flow rate capabilities for water-based systems to improve dispense accuracy and reliability.

Poridex

Poridex based debubblers provide rapid bubble removal for locations where bubble introduction cannot be avoided.

COMMON APPLICATIONS IMPROVED WITH DEGASSING

- ✔ **Diagnostic Instrumentation:** Clinical chemistry, immunoassay, hematology and molecular diagnostics
- ✔ **Analytical Instrumentation:** High performance liquid chromatography, sample handling and preparation
- ✔ **Biotechnology:** Next generation sequencing, sample handling, preparation and other microfluidic applications

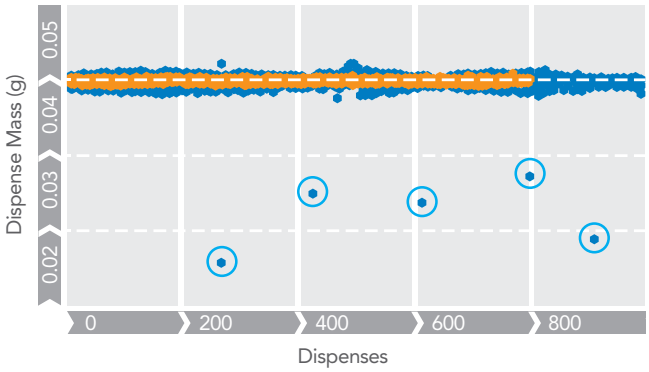
Importance of Degassing

Degassers avoid inaccurate sampling, maintain throughput and reduce errors by removing dissolved gases – even across complex fluid systems – before they outgas into bubbles. Utilizing degassing in your fluidic path is essential for consistent and accurate results.

Degassers greatly improve precision by degassing fluids far below the saturation point so instrument operations remain bubble-free. Without degassing, repeat sampling is required to detect inaccurate readings, which reduces throughput along your fluidic path. If bubble formation is not initially identified, sample assessment may be flawed. As the graph below demonstrates, degassers greatly increase accuracy for dispense volumes over time, in standard operation.

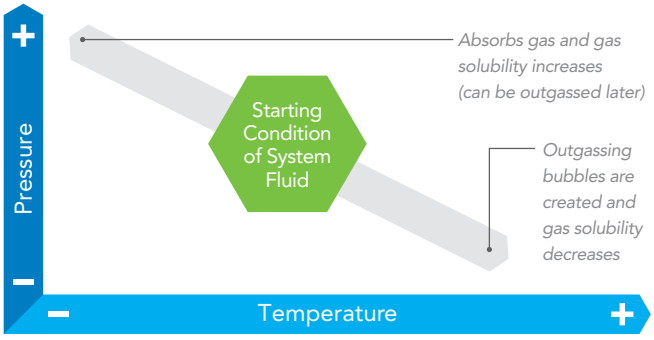
Temperature, pressure, reagent concentration and sock or agitation are all common variables that reduce the saturation point of systems fluids, resulting in outgassing that forms bubbles. IDEX Health & Science degassers manage efficiency across a wide range of flow rates and conditions with closed-loop vacuum control, to greatly enhance run-to-run reliability and throughput, while maintaining dispense accuracy to avoid sample loss.

Dispense Volume Over 1,000 Dispenses*



- Dispensing with a Degasser
- Dispensing without a Degasser
- Lower dispense volume reading due to bubble in system
- * In most water-based applications

Solubility of Gas System Fluids



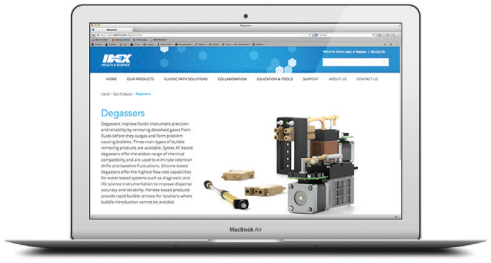
+ Increase − Decrease

Any time system conditions shift in a way that reduces the gas solubility level of a fluid, outgassing occurs and bubbles form. If conditions change towards the lower right at any point in the fluid path, bubbles will be generated.

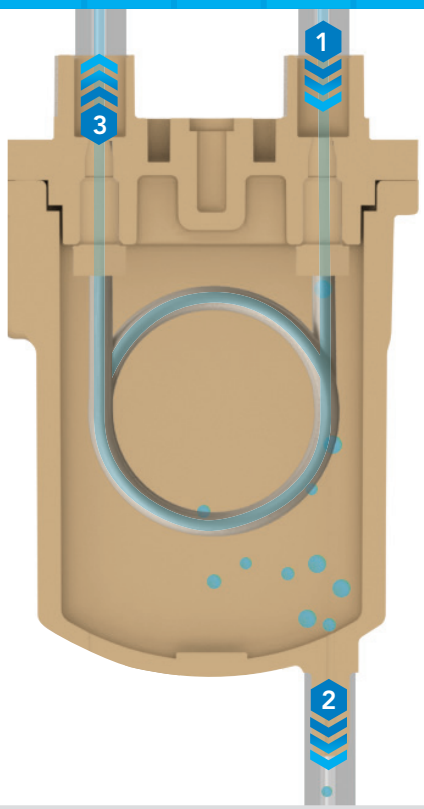
Learn More on Our Website

Explore our full list of degassing products, 360 degree interactive 3D images, complete specifications & more!

www.idex-hs.com/degassers



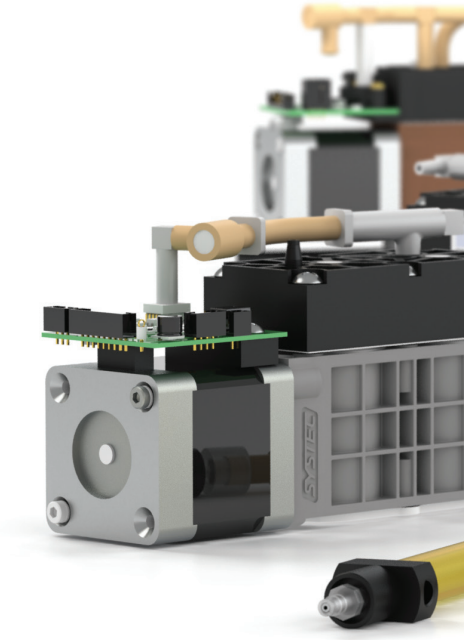
Degassing Methods



Degassers

Degassers eliminate bubbles before they form, which enhances instrument accuracy. Degassers offer the greatest advantage in complex systems, considering a single degasser can degas bulk fluid throughout an entire operation, regardless of the number of terminal flow paths.

1. *The fluid stream enters the degassing chamber containing dissolved gas molecules and possibly bubbles*
2. *A vacuum is used to pull the dissolved gas molecules from the fluid stream*
3. *The fluid exiting the degasser is now free of dissolved gasses*



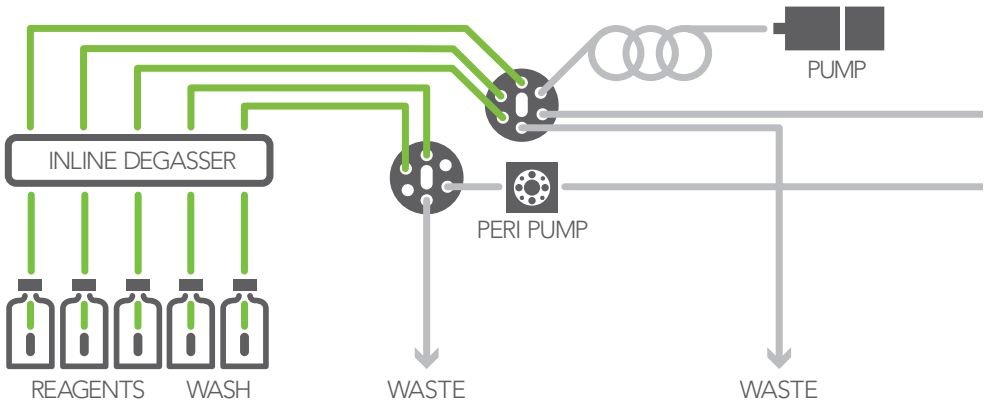
OUTGASSING

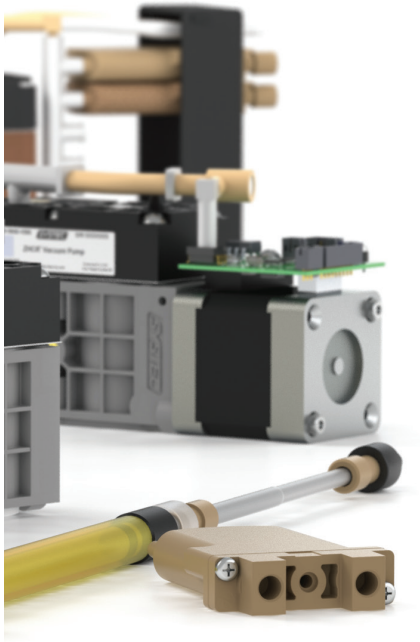
Outgassing occurs when a solution's gas saturation point is altered due to the following causes:

- **Capacity changes such as temperature increases or reduction in pressure**
- **Mixing different types of reagents or a change in reagent chemistry**

Degassing in Bulk Fluids

Placing our degassers directly after the point which bulk fluids are being aspirated into an instrument will keep bubbles from forming throughout your system. Even small changes can result in trace amounts of outgassing to accumulate over time, in junctions and fittings. Bubbles introduced by loading and unloading bulk fluids, can be captured and removed by debubblers before causing system problems.

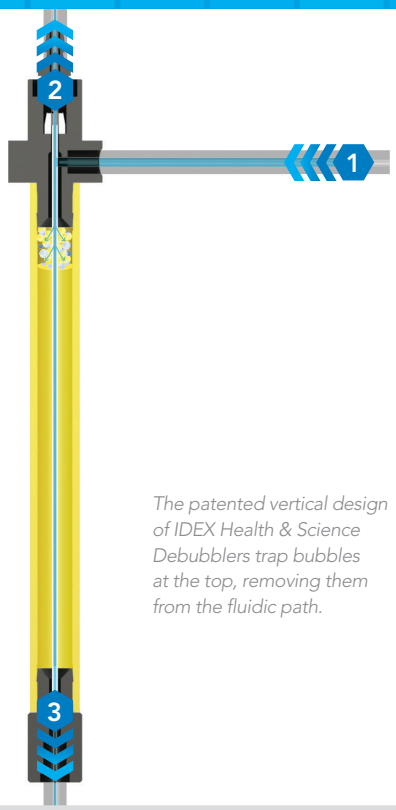




Debubblers

Debubblers rapidly clear air pockets where bubble introduction cannot be avoided. Due to their small size, debubblers can be used along the fluidic path, after potential sources of bubble introduction, where they continuously remove bubbles, reduce downtime, and maintain optimal throughput.

1. *As the fluid stream enters the debubbler, bubbles are trapped at the top of the chamber while fluid continues moving downstream*
2. *The vacuum source extracts the air bubbles and removes them from the fluid stream. An optional degassing tail can remove dissolved gasses in the fluid stream*
3. *The fluid exits the degasser, now free of bubbles*



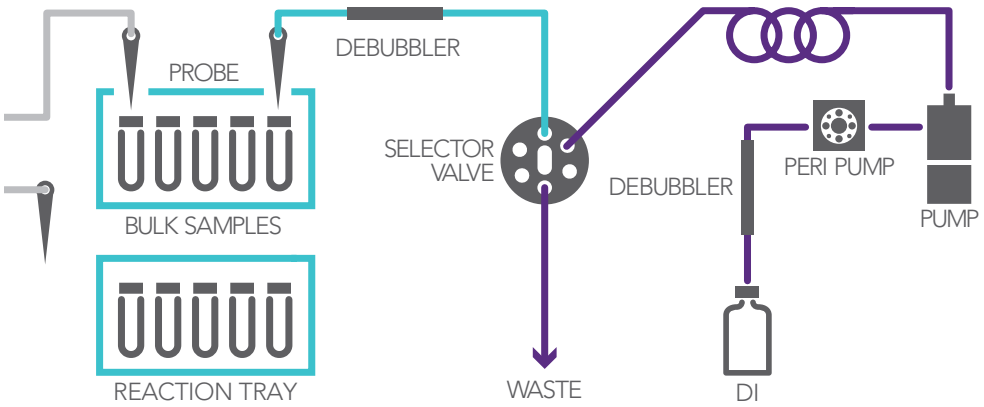
The patented vertical design of IDEX Health & Science Debubblers trap bubbles at the top, removing them from the fluidic path.

Alternative to Flow Path Adjustment

Degassing replaces the need for manual flow path adjustments, and eliminates bubble build-up on probe tips – which cause level sensing errors – resulting in less reagent usage and increased throughput.

Debubblers for Optimal Throughput

Debubblers protect sensitive points of the fluid path to maintain throughput, which is the key objective of nearly all large diagnostic instruments. Bubbles are captured early, and purged to prevent erroneous repeated measurements.

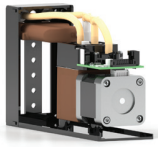


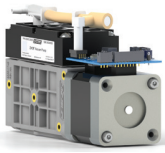
BUBBLE INTRODUCTION

Bubble introduction occurs when air is brought into the flow path by the following causes:

- **Bulk fluid handling and changing**
- **Sample injection**
- **System leaks**
- **Air permeable system tubing**

Targeting Your Solution

			Complete Degassers DEGASSING CHAMBERS & VACUUM SYSTEMS			Degassers for Aqueous Based Fluids SILICONE MEMBRANE	
							
		Type of Degassing System	**Stand Alone Degassers**	**OEM Mini**	**OEM Mini Lite**	**250w Degassing Chamber**	**300w Degassing Chamber**
		Number of Independent Fluid Channels	1 – 5	1 – 5	1 – 6	1	1
		Dimensions (L x W x H)	10.4 x 2.9 x 5.2″ (26.4 x 3.4 x 13.2 cm)	7.9 x 6.0 x 2.4″ (20.0 x 15.2 x 6.1 cm)	6.8 x 2.1 x 4.0″ (17.3 x 5.3 x 10.2 cm)	9.9 x 3.5 x 3.5″ (25.1 x 8.9 x 8.9 cm)	3.8 x 3.5 x 3.5″ (9.7 x 8.9 x 8.9 cm)
1	Where are the bubbles coming from?	Outgassing	✓				✓
		Introduced Leaks	✗				✗
2	What type of fluid does your system use?	>50% Water Solution	✓				✓
		<50% Water Solution	✓				✗
3	What maximum flow rate is needed?			≤ 40 mL/min		≤ 250 mL/min	≤ 300 mL/min
4	Which vacuum system should be used? Analytical for <10 mL/min Prep for >10 mL/min	Analytical Vacuum Control	✓ Pump Included				✗
		Prep Vacuum Control					✓

	Degassers for Non-Aqueous Based Fluids AF MEMBRANE		Debubblers PORIDEX MEMBRANE			Vacuum Control System
						
600w Degassing Chamber	**Mini AF Chamber**	**Prep AF Chamber**	**Bubble Trap**	**Bubble Trap & Transfer Line**	**Transfer Line Degasser**	**Vacuum Control System**
1	1	1 – 2	1	1	1	NA
10 x 4.5 x 4.5" (25.4 x 11.4 x 11.4 cm)	2.9 x 0.5 x 1.8" (7.4 x 1.3 x 4.6 cm)	4.9 x 3.4 x 1.3-2.4" (12.5 x 8.6 x 3.3-61 cm)	0.8 x 0.5 x 3.6-5.6" (2.0 x 1.3 x 14.2 cm)	0.8 x 0.5 x 17.5" (2.0 x 1.3 x 44.1 cm)	1.3 x 0.4 x 34.0-44.0" (3.3 x 1.0 x 86.3-111.7 cm)	5.0 x 1.7 x 2.6" (12.7 x 4.3 x 6.6 cm)
	✓		✗	–	✓	✓
✗			✓			✓
	✓		✓ Not Compatible with Surfactants			✓
	✓		✗			✓
≤ 600 mL/min	≤ 5 mL/min	≤ 40 mL/min	≤ 10 mL/min			Available in both Analytical & Prep
	✓	✗				✓ Available in Analytical (Low Flow) and Prep (High Flow)
✗		✓				

For a full list of degassing products, please visit www.idex-hs.com/degassers