

Delicate Work: Regulating Pressure at the Cellular Level

The Challenge:

A leading manufacturer of devices for biomedical research needed accurate pressure regulation for its pressure controller, a machine designed to seal cells during patch clamping. It turned to Marsh Medical for this delicate job.

In patch clamping, suction is applied to a small portion of a cell wall, isolating just that portion for study. In addition to suction, the pressure controller must also be able to exert positive air pressure to prepare the cell surface for suction, helping to achieve a giga-ohm seal. This need for two-way airflow makes the pressure regulator critical to the success of the overall device.



The Solution:

The manufacturer worked with Marsh Medical engineering team to develop and refine a T3000 pressure regulator especially for the device application.

Of particular importance was the appropriate voltage of the pressure regulator used within the device. In patch clamping, it is essential to precisely control the cell membrane to maintain accurate results. Optimal voltage regulation also helps reduce noise and artifacts in the data. Excessive voltages can damage the cell membrane.



The Result:

On working with Marsh Medical, the device manufacturer's project manager said: *"We initially found the Marsh Medical pressure regulator online and knew it was the one we wanted. We contacted the engineering team and told them of the pressure ranges we wanted to achieve, and our desired voltage parameters. They were able to customize a pressure regulator to specifications that were perfect for us. It is exactly what we needed for our device. The entire project came together in just a few short months."*

"This is a key, critical component to our pressure controller. It is a quality product with the flexibility that we need ... but what really sets Marsh Medical apart is how invested they are in our success. Marsh Medical is more than a supplier to us. They are a strategic partner to our success. They truly care about the outcome, and it shows."

The manufacturer also appreciates the speed with which new orders are turned around, typically in four to six weeks, as well as ongoing technical support from Marsh Medical's engineering team.

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The customer's pressure controller is primarily designed for automated patch clamping, but its versatility also allows for various other applications. The controller can also be used for drug puffing or studying stretch channels. The customer promotes the air flow within the unit as having been optimized, leading to superior performance. The unit also includes a pressure gauge to assist its users in determining ideal pressure for making seals.

Marsh Medical means truly custom solutions, designed and engineered in-house, manufactured under strict supervision, which deliver exacting, repeatable results. Our expertise in application sciences, material science, pressure and flow, timing controls, and automation bring ongoing value to customers that require more power, greater precision, and smaller components while never sacrificing performance. **M**



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About Marsh Medical

Marsh Medical brings nearly a half-century of experience in the design and manufacturing of medical device components into a single access point. Marsh Medical's dedicated team shatters the limitations of the past with new designs, improved performance, unmatched adaptability, and innovative materials. In-house engineers and chemists develop custom solutions to the challenges facing manufacturers of today's medical equipment. Gain greater convenience, faster service, and streamlined procurement from a trusted name. For more information, visit www.marsh-medical.com



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Headquartered in Newell, W. Va., USA, The Marsh Bellofram Group of Companies is an AS9100D and ISO9001:2015 certified global manufacturing collective. Its portfolio comprises high-performance OEM, industrial, and process control instrumentation, including timers and counters, digital controllers, RTDs and thermocouples, pressure instruments, FRLs, cylinders, natural gas and propane pressure regulators, valves, air pressure regulators and transducers, tank and liquid level measurement systems, pump and motor protection switches and alternating relays, as well as sensors, industrial diaphragms, and specialty silicones. For more information, visit www.marshbellofram.com.