

# LEE TECH TALK

## TECHNICAL APPLICATION NEWS BRIEF

### INNOVATIVE PINCH-TUBE SOLENOID VALVES IMPROVE CYTOMETER PERFORMANCE AND LOWER COSTS

#### The Challenge

As today's flow cytometers are being pushed to increase sample throughput, they are also extending their performance into single-cell biology where smaller volumes are being controlled. Because of these demands on functionality, it is critical for the sheath fluid and sample to have smooth, laminar flow as well as low crossover volume for faster sample processing. Flow cytometers also need to maintain cell vitality to ensure accurate analysis of targets. If these characteristics can be optimized, cells can be isolated and presented to the interrogation point perfectly, every time.

#### The Solution

The Lee Company's LFY2 Series internal pinch-tube solenoid valve features an innovative Y-shaped elastomer tube in a 3-way configuration. This tube allows for single-plane flow through the valve, keeping fluid flow laminar. The valve's 3-way configuration facilitates efficient flow selection between samples, calibrants, sheath, or cleaning solutions. Unlike traditional pinch valves, the LFY2 Series is durable and requires no maintenance across its extensive cycle life. Finally, the LFY2 Series features an extremely low internal volume enabling microliter sample volumes and cost savings on reagents.



#### The Benefits

The LFY2 Series valve improves the supply and regulation of samples, reagents, and sheath fluid during both sample preparation and analysis. The LFY2 Series is constructed from inert materials and can handle a wide variety of fluids commonly used in flow cytometers and sample preparation. The 10 $\mu$ L low-volume internal pinch-tube is easily flushed between samples, reducing the amount of wash volume and flush time, thereby increasing throughput. Further benefits of the unique pinch-tube design include low shear, which increases the viability of cellular samples and improves cell count accuracy. In addition, the LFY2 Series can be easily mounted and features industry-standard  $\frac{1}{4}$ -28 or 062 MINSTAC ports for a seamless connection to your flow cell or pump.

#### Potential Applications

The LFY2 Series excels wherever low crossover, low shear, and low internal volume switching is required. These valves are often used for supplying sheath fluid, controlling samples upstream of the flow cell, or introducing cleaners or reagents to the flow stream. Thanks to its small size and low cost, the LFY2 Series is frequently utilized as a high value alternative to rotary shear valves for stream selection.

#### Lee Solenoid Valves

These internal pinch-tube solenoid valves are just one of the microfluidic innovations available from The Lee Company. Lee solenoid valves feature a selection of inert isolation valves, control valves, and dispense valves with fast response times or high flow rates and unparalleled performance. Each valve is 100% functionally tested for performance and designed using materials that ensure consistent long-term reliable operation. The Lee Company has supplied millions of solenoid valves worldwide from our state-of-the-art production facility in Connecticut.

#### THE LEE COMPANY

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