TAKASAGO FLUIDIC SYSTEMS

MICRO NEEDLE VALVE

MNV Series

DESCRIPTION

The Micro Needle Valve MNV Series is designed for precise and controlled fluid management. This valve is ideal for applications requiring ultra-low flow rates, offering fine manual adjustments for flows below 1 µl/min.

Constructed from high-quality materials ensures durability and chemical resistance, making it suitable for various demanding environments. It operates efficiently within a pressure range of 0 to 200 kPa, accommodating a broad spectrum of microfluidic applications.

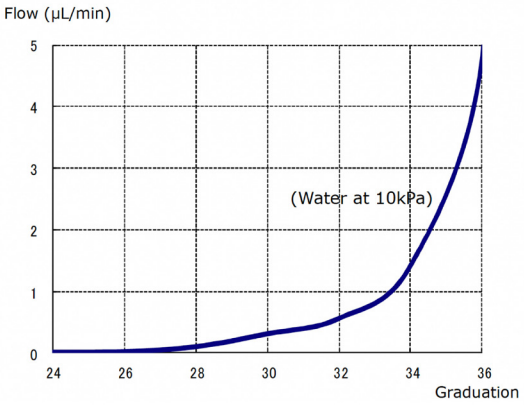
It significantly minimizes the pulsation typically seen at low flow rates, ensuring a smoother and more consistent flow essential for sensitive applications like flow cytometers and cell culture equipment.

FEATURES

- Fine manual adjustment of flows below 1 µl/min
- Reduced flow pulsation by restricting flow
- Wetted materials: Perfluoroelastomer, PEEK and stainless steel
- Operating pressure range: 0 ~ 200 kPa

FLOW CHARACTERISTICS

<Example Flow Data*>



*Flow-graduation relationship varies according to valve.

Note: Details including specifications may change without notification.

REDUCTION OF FLOW PULSATION

<Example of Combination with Piezoelectric Micro Pump>

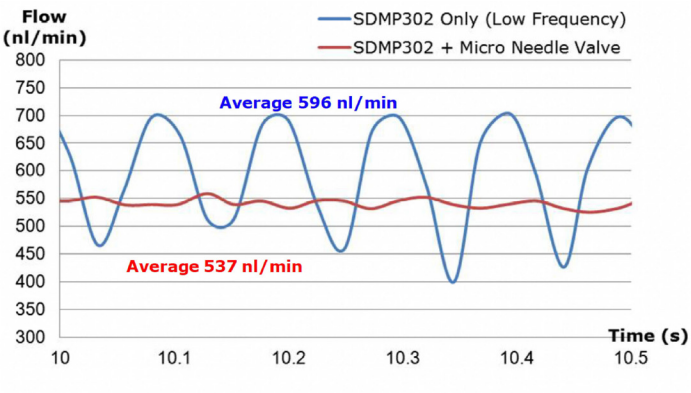
Piezoelectric micro pumps are small-sized, lightweight and slim diaphragm micro pumps driven by piezoelectric element. By considerably reducing the drive frequency and the drive voltage from the standard operating ranges, a piezoelectric micro pump alone can transfer µl/min level flows. However, significant pulsation is created at a low flow rate as represented by the blue line in the graph below.

By incorporating a micro needle valve on the discharging side of a piezoelectric micro pump, a low flow rate with almost no pulsation can be achieved. The red line on the graph below is an example that shows this remarkable reduction in pulsation. Pulsation can also be reduced when combined with other kinds of pumps, such as peristaltic pumps.

Note:

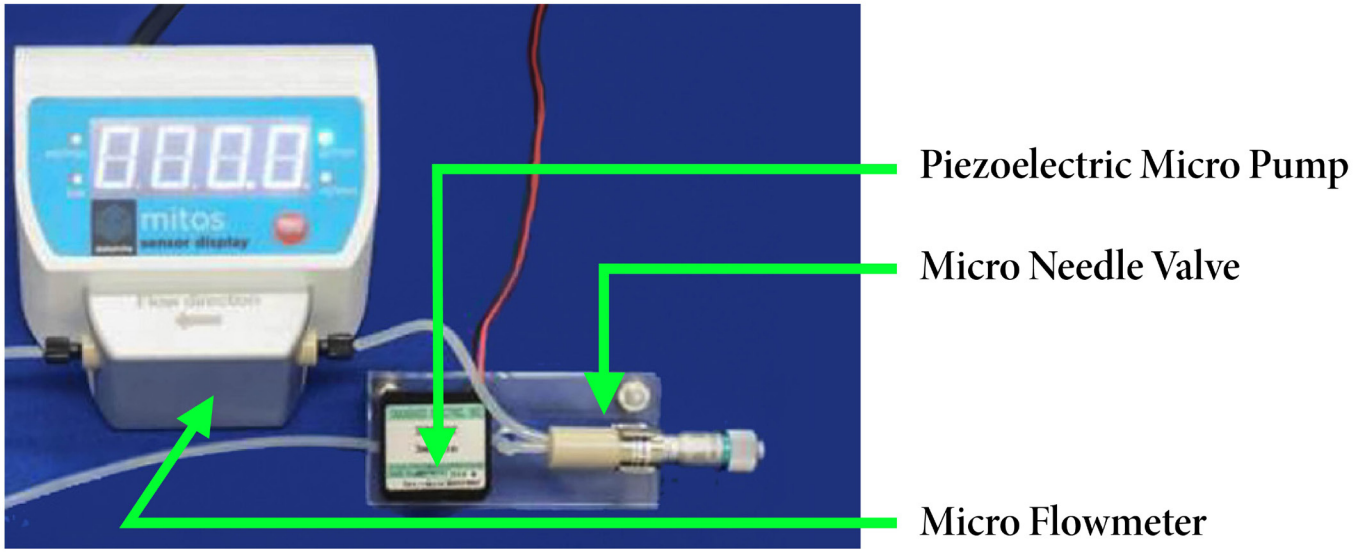
The actual effect may change depending on the flow rates, pumps, types of tubing, etc. Please consult with us for more details.

FLOW DATA OF PIEZOELECTRIC MICRO PUMP SDMP302 (AT 10 HZ, 150 VP-P)



LOW PULSATION MICRO PUMP MODULE

<Example of Combination with Piezoelectric Micro Pump>



The Low Pulsation Micro Pump Module is a module to adjust the flow of a piezoelectric micro pump at the µl/min level using a micro needle valve. In the setup in the left picture, the output flow from the module is being measured by a micro flowmeter. The features of this module make it suitable for various fields, such as flow cytometers, cell culture equipment, etc.