

Peristaltic Pump VS Syringe Pump

INTRODUCTION

Different types of application scenarios require different kinds of pumps, and among all types of pumps, peristaltic pumps and syringe pumps are often preferred.

Peristaltic pumps are suitable for applications with large flow rates and complex media; Syringe pumps are more suitable for applications that require higher transmission accuracy and are more sensitive to pulses.

Usually, syringe pumps are more commonly used in laboratories, while peristaltic pumps are more widely used in industrial applications.

But with the development of technology, pump models with smaller volume and higher infusion accuracy have gradually emerged in the field of peristaltic pumps; The field of syringe pumps has also seen the emergence of constant flow pump model that can continuously deliver liquids and meet greater flow and flow rate requirements.

The application scope of the two pumps is gradually overlapping, which brings greater difficulties for users to choose before conducting scientific research or industrial projects. Users sometimes find it difficult to understand the differences between the two kinds of pumps and make appropriate choices.

Therefore, we are here to briefly talk about some main characters as well as advantages and disadvantages of peristaltic pumps and syringe pumps, aim to help users choose pumps that are suitable for their own applications.

WHAT IS A PERISTALTIC PUMP?

The peristaltic pump transmits liquid by rotating the squeezing tube with a roller, which is an economical and reliable choice, especially for applications with higher flow rates and larger flow volumes, or viscous liquids need to be transferred.

One of the significant advantages is that the pump body does not make contact with the medium, ensuring that the medium will not be contaminated; In addition, the cost of tubes is relatively low, making them easy to be replaced and maintained.

However, due to the fatigue wear caused by long-term use, the tube needs to be replaced regularly; And during the working process, the noise of peristaltic pump is usually relatively high. Due to the inevitable presence of pulses, as well as the variability of motor rotation and varying degrees of tube compression, the accuracy of transmission can be affected.

Therefore, for high-precision applications in laboratory environments, peristaltic pumps won't be a good choice, like for research on microfluidics, it's not recommended to use peristaltic pumps.

WHAT IS A SYRINGE PUMP?

The syringe pump extracts and perfuses liquid through a syringe, consisting of a stepper motor and its driver, a screw, and a bracket. For high-precision applications, especially those with high pulse requirements such as flow chemistry, microfluidics, ultrasonic spraying, electrospinning, etc., syringe pumps will be the best choice.

DK INFUSETEK provides economical SPLab and intelligent ISPLab laboratory syringe pumps. When attached with a 0.5uL micro syringe, the flow rate can be as low as 0.008 nL/min; When paired with a 150mL plastic syringe, the flow rate can reach up to 165 mL/min. Both models have single, dual ... up to 12 channels, providing a wide range of speed support for different applications, especially for microfluidics.

Moreover, DK INFUSETEK has specially developed a CFSP constant flow syringe pump that can be applied to both laboratory and industrial fields, which combines the high-precision characteristics of syringe pumps and the high flow and continuous transmission characteristics of peristaltic pumps.

Instead of the traditional laboratory models with two directional syringes, allowing them to move simultaneously to achieve a "constant flow" effect, the CFSP constant flow syringe pump, designed with two alternating syringe units and rotary/electromagnetic valves, provide with precise and uninterrupted liquid transmission. The flow rate range is 0.06µL/min-70mL/min, and withstand pressure can be up to 2 Mpa. It is most suitable for scientific researches and industrial supporting applications in various fields such as flow chemistry, microfluidics, biopharmaceuticals, spraying and so on.

COMPARISON

Most of the latest generation of commonly used types of syringe pumps and peristaltic pumps do not have a significant price difference, but the application of the two kinds of pumps are usually quite different.

For peristaltic pumps, it's suitable for transmitting various liquids, including corrosive, high concentration, viscosity, and even suspended particles, in situations where accuracy requirements are not high. It is necessary to choose appropriate pump heads and tubes, and pay attention to regular maintenance. The main application areas include industrial supporting scenarios such as medical equipment, environmental treatment, and food/drug dispensing.

The syringe pump provides higher precision flow control, and its cutting-edge application scenarios include liquid flow batteries, microfluidic reactors, and micro/nano manufacturing. Besides, industrial syringe pumps can be used in conjunction with spin coating, coordinate dispensing, peptide synthesis, and chromatographic equipment. Syringe pumps are still the most reliable choice in research fields such as life science, flow chemistry, material engineering, and drug development, etc.

CONCLUSION

When simple liquid transfer is required, or for rough research without the need for fluid control within a small flow range, a peristaltic pump may be the one you need. But if you are looking for equipment for precise liquid transfer, then the laboratory, industrial, and constant flow syringe pumps from DK INFUSETEK will definitely be your best choice.

Product Knowledge



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