The Benefits of Progressive Cavity Pumps in Your Dispensing Process

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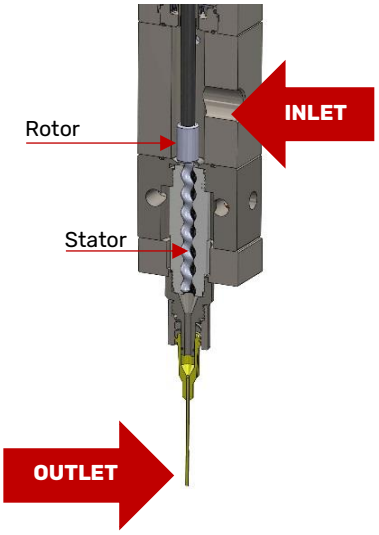
Progressive cavity pumps are ideal solutions for applications requiring a high level of dosing accuracy while minimizing shear on dispensed materials. By nature, progressive cavity pumps operate in accordance with a positive displacement principle. Material flows through the valve as it progresses through fixed cavities created as a helical rotor turns. Since each cavity is fixed, slight variations in material characteristics will not impact the volumetric displacement, making progressive cavity pumps highly accurate options for precise applications.



Progressive cavity pump fluid flow path

As the rotor spins, it self-seals against a molded seal called a stator. The fact that the rotor seals is critical as it allows the pump to be widely used with low viscosity fluids without dripping. The rotor's rate of rotation is controlled via a servo motor. The rate of rotation directly impacts the pump's output creating a linear relationship between motor RPM and flow rate. For example, if you were to double the rotor's RPM, you would in turn the double the flow rate of the pump. This relationship makes programming the pump or customizing your dispense volume very easy to accomplish.

One of the greatest advantages of progressive cavity pumps is that the dispensing process is continuous and pulse-free. Unlike piston pumps, a progressive cavity process does not need to recharge a metering chamber permitting limitless shot sizes. Further, the rotor-stator design principle and low inlet pressure (under 85 psi) results in very little shear on the chemistry. Low shear means minimal wear on the pump itself and the ability to process lightly filled or abrasive chemistries without damaging the material. The rotor and stator can also be made of various materials. When processing abrasive fluids, it is common to utilize a carbide rotor to assure longer pump life.

Progressive cavity pumps can be utilized in single or dual-component applications. Their ability to accurately dose small quantities of material makes them ideal choices for difficult-to-process 2K applications with wide mix ratios. Again, with equivalent displacement pumps in operation, you can easily program and tweak a mix ratio by altering the rotor RPM speed. At a 1:1 ratio both pumps would run at the same motor speed. At a 2:1 ratio, component A's pump would run twice as fast as pump B.

Common applications for progressive cavity pumps are precision bead dispensing, encapsulation, and conductive greases or thermal interface materials.

If progressive cavity pumps have a downside, it is in their limited flow rates. Having a full line of pumps that feature a wide range of rotor displacements is a must for flexibility. Even though progressive cavity pumps are a continuous flow process, a pump with a mismatched flow rate can lead to a significantly longer lead time than is necessary. Consult your dispensing professional to assure the progressive cavity pump selected for your application is optimized across all necessary dispensing processes.

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