

## APPLICATION

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# FOCUS

## PRECISION LIQUID FILLING

DRAFT



## Thermo Scientific Maserflex® Pumps Ensure Precise, Repeatable, And Flexible Pharmaceutical Production

### Challenge:

Maintaining precise dosing accuracy with high repeatability presents major challenges for liquid fillers – especially when operating centrifugal or rotary lobe pumps for lower volume products such as vials, single doses and injectables. Precision liquid filling is crucial for product integrity, and high repeatability ensures production schedules can be precisely set and met. It is often difficult to pump ultra-precise flow rates with rotary lobe pumps, however. And, like centrifugal pumps, they are often time-consuming to clean and sterilize.

### Solution:

Masterflex peristaltic pumps are highly-suited for pharmaceutical liquid filling applications – from benchtop fillers to large-scale automatic systems. Unlike many pump designs, Masterflex pumps easily maintain a precise, constant flow rate with excellent repeatability, providing volumetric accuracies of  $\pm 0.5\%$  of liquid fill volume, or better. Customers also gain speed and flexibility because product comes into contact with only the tubing and filling needle, which can be replaced in less than a minute.

### Benefits:

With adjustable 650:1 resolution, bi-directional flow and self-priming capabilities, a Masterflex pump provides for a smooth, seamless liquid filling operation. Its small size makes it a perfect fit for clean rooms, and the validation-friendly peristaltic design allows for fast changeovers via medical-grade tubing, easy set-up, easy CIP/SIP (cleaning/sterilization in place) and zero cross contamination. Positive shutoff prevents overfilling, ensuring a high degree of process and product security while optimizing production time.

**PRECISE LIQUID DISPENSING  
– AND MUCH MORE**

Accuracy is crucial for filling equipment in the pharmaceutical industry, but most applications also demand high speed for line efficiency as well as adjustable speed for overall line flexibility to serve different container sizes and product consistencies. Not only must the pump system meet these critical operating parameters, it must also meet aseptic production requirements, be CIP/SIP capable, and require only minimal parts change to minimize the downtime associated with product changeover.

All these demands are met with Masterflex® pumps – while providing much more.

**A FLEXIBLE, LOW MAINTENANCE PUMP SYSTEM**

Masterflex pumps provide for sterile, precision filling of liquid volumes, with an accuracy of  $\pm 0.5\%$  or better, manually-adjustable speeds of 1-to-650 rpm, and dispense volumes from 10 microliters to 10,000 liters. The peristaltic design also makes Masterflex pumps extremely flexible with product viscosities as well as particularly gentle on shear-sensitive products.



A maintenance-free brushless motor drive, rated for continuous duty, and roller and ball bearing pumphead construction produce a robust, powerful pump in a small package, ideal for limited-space clean room applications. Many models include digital drives with calibration by simple and accurate microprocessor controls – and LCD displays in sealed washdown enclosures. Masterflex pumps are the best choice for filling liquid pharmaceuticals, ensuring a precise, repeatable, and sterile process. They even operate dry without damage.

With Masterflex pumps, filling applications are highly precise, repeatable, sterile and flexible.

**SPECIALIZED FLUID HANDLING****Design allows for quick product changeovers and zero potential for cross contamination**

Masterflex pumps are easy to sanitize – a vitally important consideration in pharmaceutical production. The only material the fluid touches is the inside of the tubing. Since no other parts of the pump ever contact the solution, only the tubing needs to be flushed or changed.

Unlike other pump designs, which have wetted parts with cracks and crevices that are often difficult to clean and sterilize, a Masterflex pump never needs to be disassembled to be cleaned. When the process is completed, the tubing can be easily sterilized, or can be treated as a disposable and simply replaced to eliminate contamination potential and simplify clean-up validation.

Masterflex pumps accommodate a large range of tube sizes. High-tech tubing materials and new, advanced pumphead designs provide precise, reliable and reproducible continuous fluid transfer for extended periods. Precision extrusion enhances tubing life, flow, accuracy and pressure performance. Multiple tubing formulations and a wide array of Masterflex Easy-Load® pump heads are available to meet almost every need for pharmaceutical production.

Whether your application is small batch filling or high volume automated production (or somewhere in between), Masterflex peristaltic pump solutions are the answer.

**MASTERFLEX PUMPS & TUBING MEET THESE APPROVALS**

UL, cUL, CE, ISO 9001, ISO 13485, USP Class VI, European Pharmacopoeia, FDA