

With Thermo Scientific Masterflex Pumps, Wastewater Treatment Plants Can Finally Optimize NaOCl Feed

Gregg E. Johnson, Thermo Fisher Scientific, Fluid Handling, Barrington, IL, USA.

Key Words

- Masterflex
- Rapid-Load
- Chemical Feed
- Fluid Transfer
- NaOCl Feed
- Peristaltic Pump
- Wastewater Treatment

A common problem with feeding commercial sodium hypochlorite (NaOCl) and other high strength chemical oxidants is outgassing. Outgassing occurs when a pocket of vapor forms in the fluid line, obstructing normal flow. Outgassing often vapor locks chemical metering pumps and can lead to system leaks and result in unscheduled downtime and poor process performance. Another common problem with feeding NaOCl is hard water scale, which can completely jam the operation of a pump's wet end.

Solution

The inherent design of Thermo Scientific Masterflex peristaltic pumps eliminates the potential for vapor lock because the fluid being pumped never actually touches the pump, but rather is occluded, or squeezed, through elastomer tubing. This squeezing action of the flexible tubing generates a powerful vacuum that moves both gases and liquids simultaneously, without clogging or producing vapor lock. Scale problems in the pump also are a non-issue because



long-term operation plus simple, low maintenance. There is no unscheduled downtime to bleed the lines of vapor locked pumps, no problems with scaling, and no valves or seats to clog or wear out. Together with new formulations providing tubing life in excess of 10,000 hours, makes Masterflex® the pump of choice when performance counts.



there are no valves or seats to foul in the fluid stream.

Masterflex® pumps provide wastewater treatment operations extremely versatile liquid chemical feed and fluid handling with the highest reliability and

ing applications. With Masterflex pumps, a well-balanced range of capacities and flexibility combines with excellent repeatability and optimal chemical resistance to provide for precision, high reliability and long-term opera-

tion for handling virtually all chemical products for wastewater treatment. This includes sodium hypochlorite and other high-strength chemical oxidants; extremely aggressive materials such as ferric chloride; shear-sensitive products like polymers; and even lime slurries and other highly viscous and abrasive materials.

An Accurate, Reliable Option

Fluid being pumped never touches the pump, only the tubing, which means the pump lasts a long time and the same pump can be used for various fluids by simply changing the tubing. Masterflex pumps are self-priming (to 29 feet down), can operate dry without damage, produce no siphoning effect when stopped, have an accuracy rate better than 1 percent and are easy to maintain.

As municipal and industrial wastewater treatment operations become more specialized and complex, carrying out precise dosing, chemical delivery, and product transfer operations is critical. With all this going for them, it's easy to see why Masterflex pumps are a highly viable alternative to diaphragm

Optimizing Chemical Feed

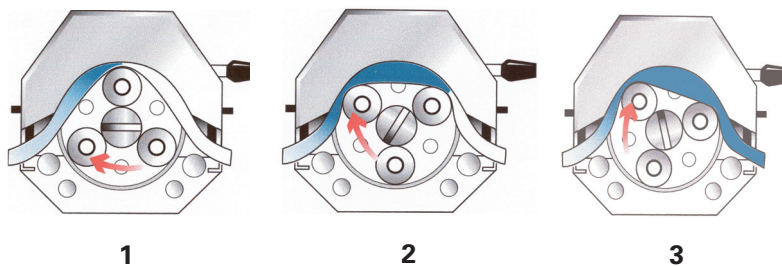
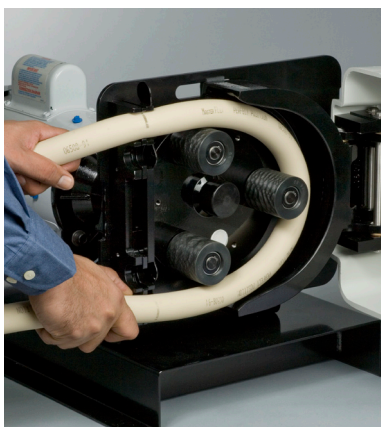
Safe, accurate, and efficient chemical dosing and transfer is the goal of every wastewater treatment operation, and this requires pumps designed to handle the most demand-

metering, lobe, gear and progressing cavity pumps in meeting the stringent challenges in wastewater treatment applications.

An Effective Alternative

Masterflex pumps provide multiple advantages over diaphragm liquid metering pumps:

- Powerful vacuum moves both gases and liquids without clogging and *no vapor lock*.
- Peristaltic design means *no valves, glands or seals to wear out* or become clogged.
- Superior performance in corrosive, viscous and abrasive handling applications.
- Pump acts as its own check valve – when the pump stops, the occluded portion of the tube stays squeezed shut.
- Very gentle method of pumping *does not damage shear-sensitive products*.
- Requires very little maintenance to keep in peak operating condition.
- Masterflex pumps are extremely flexible with product viscosities.
- New formulations in elastomer materials provide for tubing life in excess of 10,000 hours.



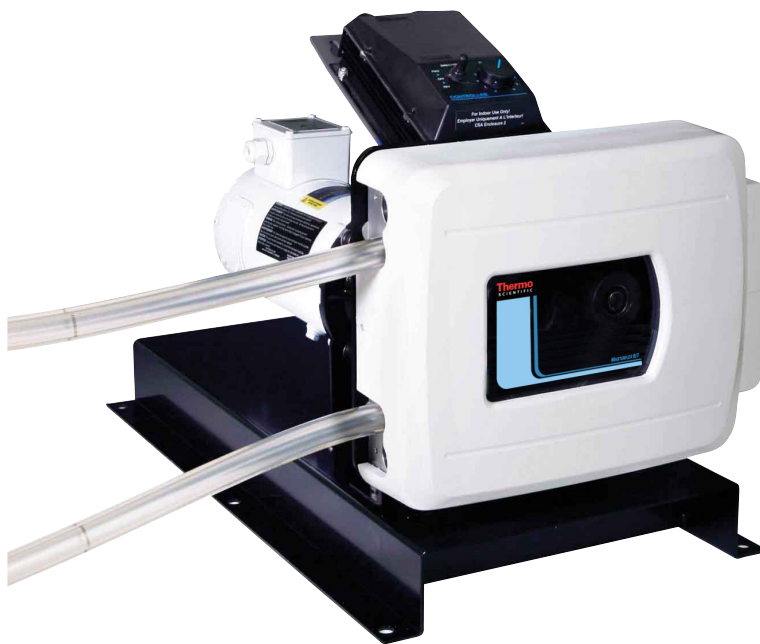
How a Masterflex Pump Works

Peristaltic design makes it a primary choice for use in wastewater treatment.

A Pump Head consists of only two parts: the rotor and the housing. 1) The tubing is placed in the tubing bed — between the rotor and housing, where it is occluded (squeezed). 2) The rollers on the rotor move across the tubing, pushing the fluid. The tubing behind the rollers recovers its shape, creates a vacuum, and draws fluid in behind it. 3) A

“pillow” of fluid is formed between the rollers. This is specific to the ID of the tubing and the geometry of the rotor. Flow rate is determined by multiplying speed by the size of the pillow. This pillow stays fairly constant except with very viscous fluids.

Masterflex pumps are self-priming (to 29 feet down), can operate dry without damage, produce no siphoning effect when stopped, have an accuracy rate better than 1 percent, and are easy to maintain.



Masterflex B/T® Rapid-Load® direct drive peristaltic pumping systems provide for simple tubing changes.

In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

Canada
+1 800 637 3739

USA
+1 800 637 3739

Worldwide
+1 847 381 7050

www.thermo.com/fluidhandling

Thermo Fisher Scientific, Barrington, IL USA is ISO certified

©2009 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.

Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.