

Maestro ULTRA

*A Revolution in
Piston Pump Technology*



BIO•CHEM
BECAUSE SUPPORT MATTERS

Maestro Piston Pumps

BioChem demands high performance from itself and its products. The Maestro line embodies excellence and sets a new standard for dispense pumps.

The Maestro is the most feature rich, accurate, longest lasting piston dispense pump in existence. It is ideal for IVD, and similar low pressure, applications. These pumps have been designed and validated to deliver double the life of any dispense pump available on the market today.

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Basic Specifications

- Dispense volumes (μ l): 100, 250, 500, 1000, 2500, 5000
- Accuracy: Programmable to 100%
- Precision: < 0.2% CV
- Full stroke: 12.7mm

Configurable Options

- Integrated 3-way valve
- RS-232, RS-485 or CAN
- Manifold integration

Typical Risk to Pumps

Concentrated Salt Solutions

For traditional piston pumps, concentrated salt solutions rather quickly cause catastrophic failure. The reason is that tiny volumes of fluid remain on the piston as it passes thru the seal. This moisture that seeps thru the seal eventually dries leaving salt crystals adhered to the piston. As those salt crystals then ride on the piston passing back thru the seal, the seal is abraded causing grooves, which result in leaks. A leaking pump is a failed pump.

Flushing is Dangerous

Flushing behind the seal of a piston pump to extend its life introduces significant risks to the instrument. Sample and reagent contamination is likely. The potential exists for exothermic reactions that can be a safety concern. This common practice should be avoided.

Contact us to read our white paper titled [“Removing the Risk of Concentrated Salt Solutions to Precision Dispense Pumps”](#) for a detailed impact study of concentrated salt solutions on piston pumps.

The ULTRA Solution

The new Maestro ULTRA uses Patent-Pending piston technology to create a piston pump which is completely immune to the negative effects of salt crystallization. There are two key technical aspects of the piston in Maestro ULTRA that allow us to bring this groundbreaking product to market.

Super Hydrophobicity and Low Surface Energy

Through the use of superior materials, BioChem has achieved the most hydrophobic piston on the market today. This essentially means that it repels water. The result is that less liquid seeps past the seal riding on the piston.

Less Liquid Behind the Seal = Fewer Salt Deposits

The Maestro ULTRA piston also has very low surface energy, which means that materials don't adhere to it. Therefore, any salt crystals that may be left behind by evaporating liquid just flake off of the piston. These flakes simply fall away leaving the piston as clean a surface as the day it was built.

No Crystals = No Abrasion of the Seal = No Leaks

Impact of Salt on Traditional Pumps

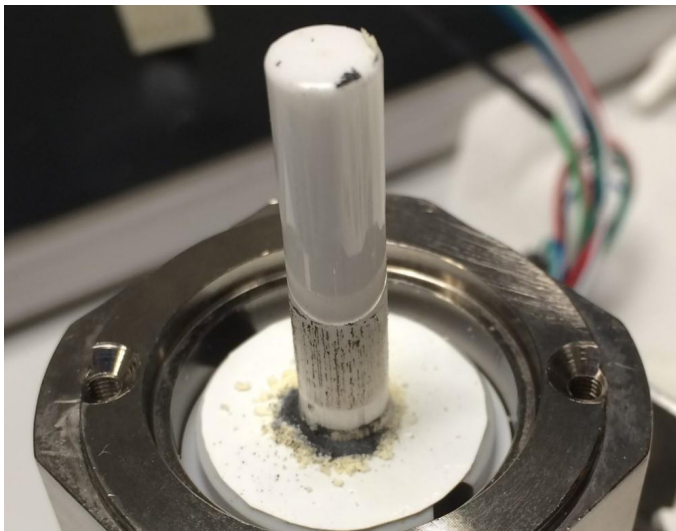


Figure 1: Typical ceramic piston pump after 1M cycles pumping 10% NaOH

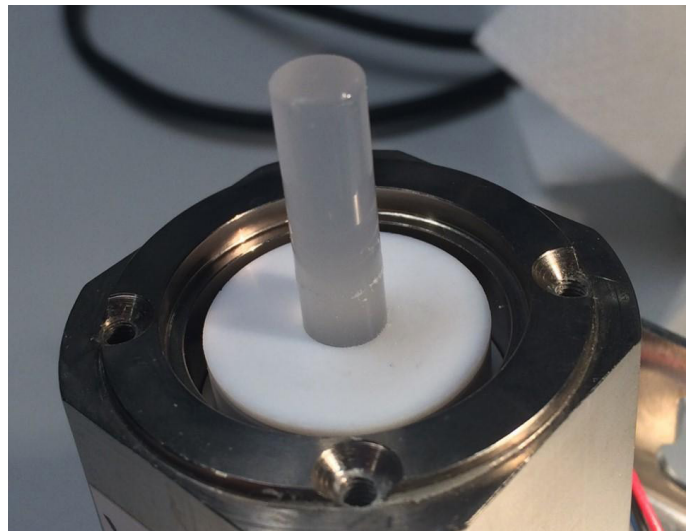


Figure 2: Maestro ULTRA after 3M cycles pumping 10% NaOH

Revolution in Fluidics

Enabling Advancement

Maestro ULTRA is a revolutionary product, because it will enable the next phase of fluidics system advancement. Benefits of Maestro ULTRA on instrument design and performance include:

- Reduced complexity
- Fewer failure points
- Increased up-time
- Zero maintenance
- Higher thru-put
- Greater test accuracy
- Simplified software
- Shorter time-to-market
- Lower cost of ownership
- Improved instrument profitability

Instrument technology is more demanding than ever, requiring more exacting performance from critical components. Maestro ULTRA is designed for precisely this purpose.

With zero routine maintenance requirements and a life expectancy exceeding all other pumps on the market, the Maestro ULTRA will revolutionize diagnostic instruments.



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