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**WATSON
MARLOW** PUMPS
Bredel

Improve your Process

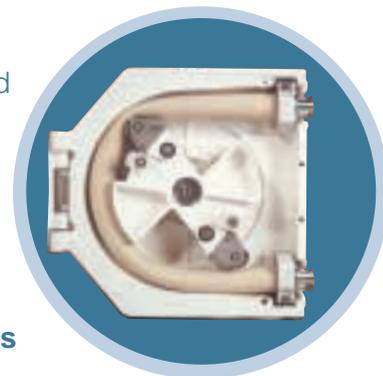
PHARMACEUTICAL and BIOTECHNOLOGY



Assured aseptic and sterile pumping ...

Pharmaceutical and biotechnology processes demand sterility and a high degree of precision to ensure the integrity and quality of the end product. Fluid isolation, and precise metering are vital, and not meeting these demands can be enormously costly. Peristaltic pumps from Watson-Marlow Bredel provide total process confidence and security by:

- **Facilitating aseptic and sterile processes**
- **Providing superior flow rate stability and metering accuracy**
- **Extending validation periods** • **Giving predictable pump service intervals**



- Bioreactors/fermenters - nutrient feed, harvesting, anti-foam, perfusion, pH adjustment
- Ultrafiltration and diafiltration • Chromatography • Media preparation

... to give you a process that you can trust ...

Zero contamination

Watson-Marlow Bredel pumps totally contain the fluid so that it is isolated from any source of contamination including the metallic components of the pump. Superior tubing material technology further enhances the integrity of the process and provides improved batch consistency which is particularly important with fermentation and mammalian cell culture.

Sterility

Residues of pumped product trapped or left in the pump are major sources of bacterial contamination to the process. This problem can be found in any pump with crevices, dead spots, seals or valves. Watson-Marlow Bredel pumps have a clear straight-through flow path and the pump chamber is always fully swept, eliminating possible batch contamination and downtime.

Easy cleaning

Cleaning and sterilising using CIP and SIP procedures is critical. Watson-Marlow Bredel pumps meet these requirements fully with CIP being carried out at full velocity without the intrusion of the bypass required by most other positive displacement pumps. Additionally, the standard pump port orientation is self-draining, thereby maintaining sterile conditions.

Low shear

Transfer of the product without degradation or damage is critical to the process. Traditional pumps can damage the product with high velocities and arduous flow paths, due to impellers, vanes, lobes or valves, but Watson-Marlow Bredel pumps avoid all these with their clean low-shear action, ensuring improved product quality.

Accuracy

Metering or dosing of pharmaceutical products, live cell cultures, nutrients, or bioreactor constituents demands accurate and repeatable flow rates. Watson-Marlow Bredel pumps provide true positive displacement with no product back-flow or slip, giving accuracies up to $\pm 0.5\%$ ensuring process stability and finished product quality.

Reliable

Pump failure during production cannot be tolerated due to the intrinsic value of the product. Watson-Marlow Bredel pumps' design, high quality manufacture and advanced elastomer technology gives long and predictable service life, and batch or production runs can be completed without interruption.



Photo supplied courtesy of CAMR®

A major pharmaceutical company producing vaccines set the goal of achieving a system with greater accuracy and reduced clean downtime. Their original lobe pump gave varied results and was time consuming to clean.

... using a pump designed for your industry ...

The most effective engineering solutions are the simplest. The peristaltic pump action is low-shear and smooth, created by compressing the tube element between rotating rollers. In between each pass of a roller, the element recovers to create a vacuum and draws in fluid. This simple dynamic effect requires no seals, valves, diaphragms or immersed rotors to leak, clog or replace, and the fluid is totally contained within the tube, separated from the pump. No other positive displacement pump offers this unique separation of pump and fluid. Watson-Marlow Bredel pumps clearly outperform other pump types. They offer improved sterile design and low maintenance, over lobe or diaphragm pumps for example.

Watson-Marlow Bredel pumps provide an extensive range of tube materials and connectors to meet your requirements.

| Tube Material | USP 23 Class VI | NSF | FDA Compliant | European Pharmacopoeia |
|---------------|--------------------|-----|---------------|---------------------------|
| Silicone | • | • | • | • |
| Bioprene™ | • | • | • | - |
| STA-PURE™ | • | - | • | - |



Standard connectors include Tri-clamp, DIN, RJT, IDF-ISS plus others for custom systems.

... and open expert consultation ...

For perfect results, experienced selection and installation advice is essential. A Watson-Marlow Bredel engineer based close to you will carry out a full consultation to ensure that we understand your precise needs, and select a suitable pump with clear benefits and payback. That same engineer will be there to support your installation and ensure you are completely satisfied.

Operations Manager

"I was impressed by the speed with which they reacted to our request, and the technical knowledge of the people who came to see me. They were very professional and knew what they were talking about."

Senior Manager

"You can rely on them from the pumps to the technical back-up. It is an overall package I know I can rely on"

Project Engineer

"I like the fitness for the job. The pumps are excellent; they perform very well with very little maintenance"

... to deliver the promised results.

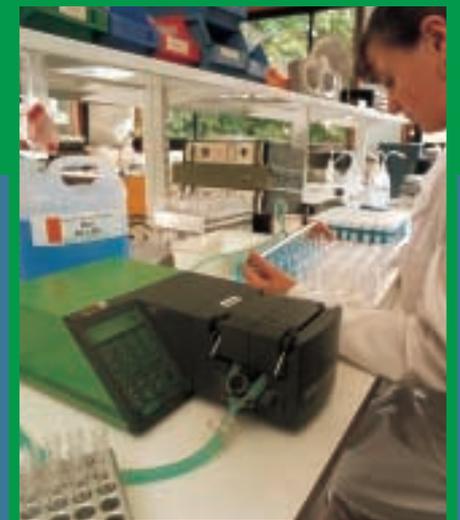
Any Watson-Marlow Bredel customer can expect significant gains. Examples of this are improved product quality, longer process run periods, extended service intervals, reduced downtime and major cost savings from waste and spoilage elimination.



After extensive trials, a Watson-Marlow Bredel 825 pump proved that cleaning could be

reduced by 50%

to 30 minutes. This was significant because cleaning is carried out at the end of each batch - six times in a 12 hour shift. Additionally, metering accuracy was greatly increased and the planned savings target has been substantially exceeded.



Single channel, low flow pumps. Fixed or variable speed.

Put a peristaltic in your process **Improve your performance**

| | | | |
|------------|---|--------------------------------------|------|
| 100 | Near pulseless, multi-channel pumps with up to 32 channels. | 0.5µl/min - 21ml/min | 101U |
| 200 | Single or multi-channel pumps with manual, remote or dispensing control. | 0.07ml/min - 2 litre/min | 205U |
| 300 | Microprocessor controlled and IP55 process pumps with manual, auto and digital control. | 10µl/min - 4.37 litre/min | 313U |
| 500 | IP55 mid-flow process pumps with full CIP and SIP capability. Fixed or variable speed. | 50ml/min - 18.3 litre/min | 505S |
| 600 | IP55 industrial pumps with manual or auto control, single or twin channel. | 1.6 litre/min - 66 litre/min | 624U |
| 700 | High flow hygienic pumps with full CIP and SIP capability. | 2 litre/min - 133 litre/min | 704U |
| 800 | Bredel: High flow industrial pumps operating at pressures up to 16 bar (230 psi). | 0.3 litre/min - 80m ³ /hr | 840 |
| SPX | | | SPX |



For further information on Watson-Marlow Bredel pumps in the Pharmaceutical and Biotechnology industry, please request copies of application and technical data sheets.