

**NEW**

## SANITARY PROCESS PUMPS

*Watson-Marlow Bredel ... Value for life*



# Pump perfection

For pumping fluids aseptically, nothing beats a peristaltic pump; and when it comes to peristaltic pumps, there's none better than Watson-Marlow Bredel.

For over 50 years, Watson-Marlow Bredel has led the world in peristaltic pump innovation, developing products that do more than just move fluids, they improve the process.

Today over 1 million Watson-Marlow Bredel pumps keep processes running around the world, handling flows from 0.4µl/min to 66.6 liters per minute and up to 100 psi.

For sanitary metering and transfer applications, our 520, 620 and 720 pumps deliver the best combination of pump and drive technology, meeting the quality control demands for high purity, accuracy and reliability expected in today's highly tuned, validated processes.

Watson-Marlow Bredel's 520, 620 and 720 process pumps (from left to right below) cater to the sanitary demands of pharmaceutical, biotech, food and cosmetic manufacturers.



## How does it work?

The pump's low-shear peristaltic action is created by compressing an FDA/USP grade tube element between rollers. The fluid in the tube is pumped forward by the roller while the recovery of the tube behind the roller draws in more fluid.

The pump is perfect for moving fluid aseptically because the fluid stays completely within the tube, with no seals, valves, or moving parts in the flow path.

## Value for life

Watson-Marlow Bredel pumps are recognized by process engineers for our high quality, reliability and performance. Our pumps help engineers simplify validation, improve yield and reduce the costs of downtime. For example, our process duty pumps need 60% fewer tube compressions than our competitors for the same flow, delivering more stable metering rates and over 2 ½ times the tube life. We prove to customers that Watson-Marlow Bredel pumps offer the lowest life-cycle cost versus other pumps:

## Why Watson-Marlow Bredel makes the right pump for your process

- Validation made easy – only the disposable tube touches the fluid
- Peristaltic contamination-free pumping principle – no seals, valves, or moving parts in the flow path
- Ultimate controllability: over 3,600:1 speed range with 0.1 rpm resolution and accuracy within  $\pm 0.5\%$



### Zero contamination

Watson-Marlow Bredel peristaltic pumps totally contain the fluid within the tube, isolating it from any source of contamination including the metallic components of the pump. Our high performance, high purity tubing further enhances the integrity of the process and provides excellent batch consistency.

### Sterility

Watson-Marlow Bredel pumps have a clear straight-through flow path eliminating possible batch contamination and downtime. Unlike rotary lobe, diaphragm, or other pump types, there are no crevices or dead spots that trap fluids or residue and introduce a major source of bacterial contamination.

### Confident controllability

Watson-Marlow Bredel pumps integrate seamlessly into your process control system. The pump is self contained and easily configurable; there is no need for separate variable frequency drives or complex control devices. With built in manual, analog and digital control features, our pumps have the I/O capabilities to meet your process control and monitoring needs.



### Low shear

Watson-Marlow Bredel peristaltic pumps are low-shear, allowing you to move product without degradation or damage. There is no need to worry about the high velocities and arduous flow paths associated with impellers, vanes, lobes or valves in other pump types that can damage the product.

### Accuracy

Metering or dosing of sanitary products demands accurate and repeatable flow rates. Using microprocessor controlled brushless DC drive technology, Watson-Marlow Bredel pumps meter within  $\pm 0.5\%$  accuracy, ensuring process stability and finished product quality.

### Reliability

We know that pump failure during production cannot be tolerated due to the intrinsic value of the product. That is why we design our pumpheads and drives to be maintenance free and utilize spring loaded rollers and tracks to provide tubing with long and repeatable life.



- Pump drives, pumpheads and tubing all last longer
- There's less downtime, less cleaning, less maintenance, easier validation
- We back our continuous duty rated process pumps with a full five year warranty
- We offer personal worldwide service and technical support to keep your process running smoothly

### Five-year warranty

Demonstrating our total confidence in reliability and our commitment to customer satisfaction, Watson-Marlow Bredel cased pumps in this brochure carry a five-year warranty against faulty materials and workmanship. It covers everything except misuse of the pump and consumable items. Your production will not stall because of us.

Add it up and that's Value for Life



*Peristaltic pumps win on every count, accurately metering suspended solids with ease*



*Reliable, accurate contract filling of veterinary medicines*



*Working in a high temperature environment proves no problem*



*Investment in new pumps at a yeast production facility has increased efficiency*



*Research to production dosing...dispensing perfection*



*Two of the fifty pumps employed in fermentor feed for test kit production*

## Pharmaceutical

A major pharmaceutical company needed to improve their process efficiency. Their original lobe pump was time consuming to clean and difficult to control. The 620 offered a solution. Its retractable rollers allowed for quick in line CIP without disassembly reducing cleaning recycle time 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, the planned savings target has been substantially exceeded because metering accuracy was greatly increased.



## One million pumps keep the sanitary industry productive

Watson-Marlow Bredel pumps save time and money by successfully handling sanitary applications in a broad range of industries worldwide including:

- **Pharmaceutical:** tablet coating, metering or dosing of pharmaceutical products
- **Biotechnology:** bioreactors/fermenters - nutrient feed, harvesting, anti-foam, perfusion, pH adjustment, ultrafiltration and diafiltration, chromatography, media preparation
- **Brewing and beverage:** metering and transfer of yeast, flocculants, stabilizers, finings and cleaning solutions
- **Food:** metering food dyes, flavorings, nutrients, vitamins, extracts and other additives, spray coating
- **Cosmetics and healthcare product:** metering perfume, dyes and fragrance oils, feed PVA adhesive, bottle filling, soap - dosing liquid coal tar
- **OEM:** panel mount or stand alone pump versions available for system suppliers



*Gentle handling of parasites maximizes yield in live vaccine production*



*In a fully automated process, this 520Di uses signals from production equipment*



*Fully integrated part of a Pyramid Labs filling machine*



*High accuracy batch filling of 10ml bottles*

## Cosmetics

At the Elizabeth Arden Research and Development Center in Trumbull, Connecticut, Watson-Marlow Bredel pumps transfer oil and waxes heated to 95°C to kettles as part of a pilot plant emulsion-making process. The emulsions, which are used in the manufacture of cosmetics, must be precisely metered to ensure product quality and prevent spoilage. The pumps ensure accurate, repeatable flow rates that can be readily increased for full-scale production. Pumps are easily changed over from one liquid to another by changing tubing or flushing with water.



## Pick a winner

Watson-Marlow Bredel's sanitary pumps are a team and they're on your side. Our 520, 620 and 720 process pumps all share the same control technology, the same human-machine interface and the same space-saving design concept. If your operator knows

**The 720 is a powerful pump** which can be fitted with one or two pumpheads for high flow metering or transfer

**The versatile medium flow 620** offers retractable rollers for quick and easy in-line SIP/CIP capability

**With its eight tubing sizes, the low flow 520** is a metering workhorse. The 520 also offers specialist pumping options, including multi-channel and low pulse dispensing

### No simpler maintenance

With a Watson-Marlow Bredel pump, cleaning, validation and maintenance could never be easier. A simple tube change, that takes only moments, leaves the flow path as good as new.

It doesn't matter if you're changing a 520, 620 or 720 tube element, it only takes a minute.

- 1: Open the tool-unlockable safety guard or track** and lift off the old tube or element
- 2: Put another tube or element in place**
- 3: Close the guard** and connect up to your system



## Pick the pump you need

Choosing the perfect pump from our many options is easy. Just answer four questions:

- 1 How much fluid?
- 2 What pumphead characteristics?
- 3 What level of control?
- 4 Which tube?

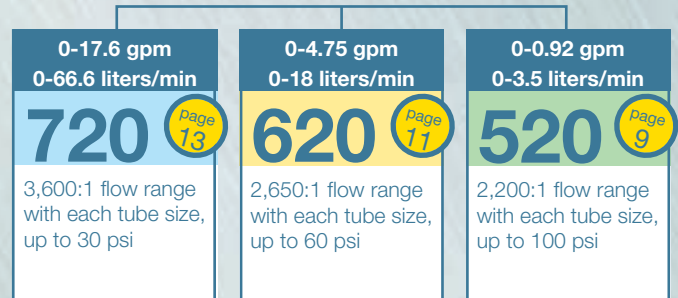
one pump, he knows them all, making process scale-up or writing SOPs a snap. All our pumps have the option for either LoadSure® elements for positive process pipe connection or continuous tubing for an uninterrupted source to discharge flow path.

- Flow to 8.8 gpm (33.3 liters/min), 1 channel
- Flow to 17.6 gpm (66.6 liters/min), 2 channels
- Pressures up to 30 psi

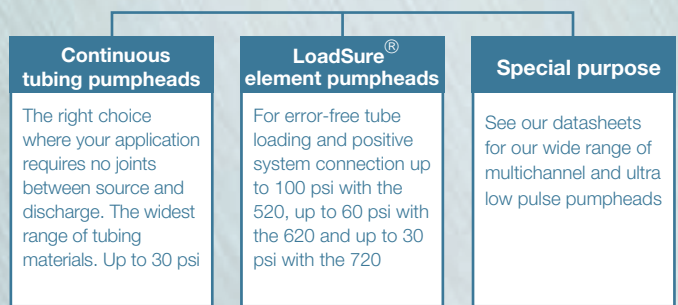
- Flow to 4.75 gpm (18 liters/min)
- Two or four roller versions
- Pressures up to 60 psi

- Flow to 0.92 gpm (3.5 liters/min)
- Pressures up to 100 psi
- Elements in 6 materials and 3 sizes
- Continuous tubing in 8 materials and sizes

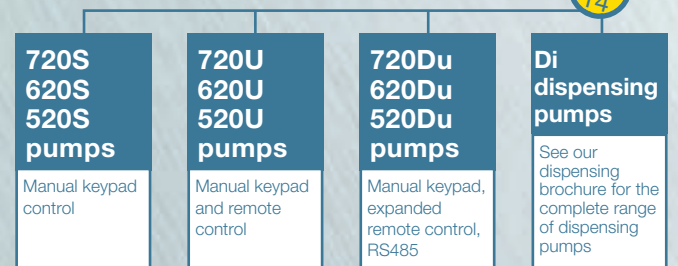
### HOW MUCH FLUID?



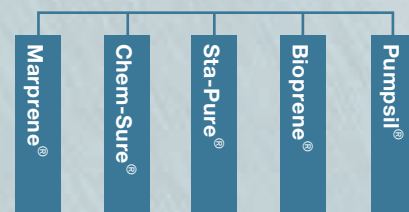
### WHAT PUMPHEAD CHARACTERISTICS?



### WHICH CONTROL OPTION? Page 14



### WHICH TUBING OR ELEMENT? Page 18



It's as easy as



Whatever your needs, Watson-Marlow Bredel manufacture the sanitary pumps of first choice.

**PICK YOUR PUMPHEAD**

## 520 LoadSure® Element pumpheads

When you need a pump with positive connection points and error-free tube loading, choose LoadSure® element pumpheads. High, medium and low pressure LoadSure® element pumpheads are available to meet your process pressure needs.

Sanitary LoadSure® elements are available in Pumpsil®, Bioprene®, Sta-Pure® and Chem-Sure® tubing with ½" PVDF Tri-Clamp style connectors. The wetted part of each LoadSure® element is fully traceable, laser etched with part number and lot number and supplied with a certificate of conformity. The element connectors are color coded to match the right tube element to the right pump.



**520REL**  
Low Pressure  
Pumphead  
Up to 30 psi

Flow rates up to 3500 ml/min (55 GPH). 3.2mm, 6.4mm and 9.6mm bore tube elements. Available in Bioprene®, Pumpsil®, Sta-Pure® and Chem-Sure®.



**520REM**  
Medium  
Pressure  
Pumphead  
Up to 60 psi

Flow rates up to 1500 ml/min (24 GPH). 3.2mm and 6.4mm bore tube elements. Available in Sta-Pure®, Bioprene® and Chem-Sure®.



**520REH**  
High Pressure  
Pumphead  
Up to 100 psi

Flow rates up to 450 ml/min (7 GPH). 3.2mm bore tube elements. Available in Bioprene® and Sta-Pure®.

## 520 Continuous tubing pumpheads are ideal for running source to discharge tubing with no breaks.



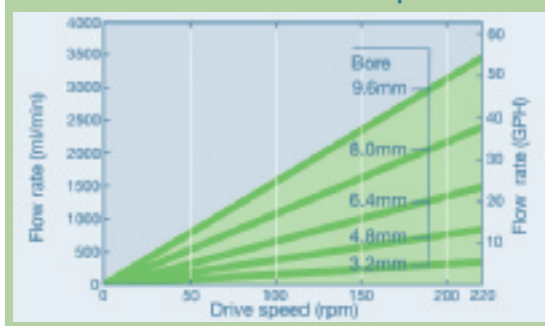
Choose from **520R** for 1.6mm thin wall or **520R2** for 2.4mm thick wall tubing. Nine different tube sizes from 0.5mm to 9.6mm bore are available in a wide range of materials, including Bioprene®, Pumpsil®, Chem-Sure® and Sta-Pure®.

Continuous tubing pumpheads generate flow rates up to 3500 ml/min (55 GPH); pressures up to 30 psi.



# 3500ml/min (55 GPH), with pressures to 100 psi

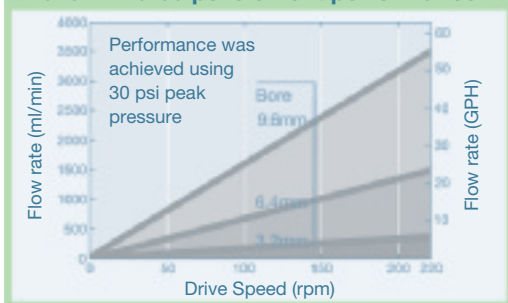
## 520R and 520R2 continuous tube performance



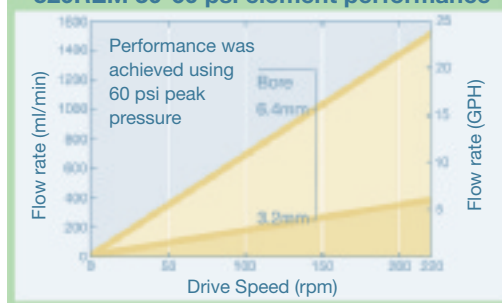
520R & 520R2 pumpheads: flow ranges, 0.1-220 rpm, ml/min*		0.5 1/50	0.8 1/32	1.6 1/16	3.2 1/8	4.8 3/16	6.4 1/4	8.0 5/16	9.6 3/8
Tube bore, mm Tube bore, inch Tube number		112	13	14	16	25	17	18	193
520R & 520R2 (continuous tubing)	Sta-Pure® Chem-Sure® Pumpsil®	0.0040 -9.5	0.01 -24	0.04 -97	0.18 -390	0.40 -870	0.70 -1500	1.1 -2400	1.6 -3500
	Bioprene® 64 shore tubing	0.0040 -9.0	0.01 -23	0.04 -92	0.17 -370	0.38 -830	0.67 -1500	1.1 -2300	1.5 -3300

\*1gal/hr = 63.1ml/min

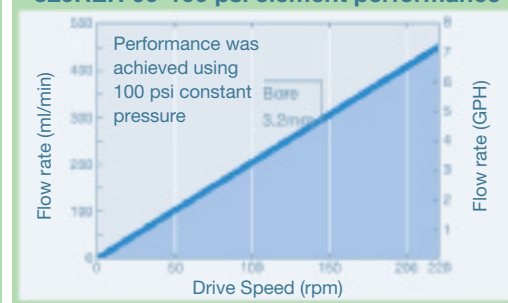
## 520REL 0-30 psi element performance



## 520REM 30-60 psi element performance



## 520REH 60-100 psi element performance



## 520 LoadSure® element pumpheads: flow ranges, 0.1-220 rpm, ml/min\*

	Tube bore, mm Tube bore, inch Tri-Clamp connectors	3.2 1/8 1/2"	6.4 1/4 1/2"	9.6 3/8 1/2"
520REL (elements to 30 psi)	Sta-Pure®, Chem-Sure®, Pumpsil®	0.18-390	0.70-1500	1.6-3500
	Bioprene® TL	0.17-370	0.67-1500	1.5-3300
520REM (elements to 60 psi)	Sta-Pure®, Chem-Sure®	0.18-390	0.70-1500	
	Bioprene® TM	0.17-370	0.67-1500	
520REH (elements to 100 psi)	Bioprene® TH, Sta-Pure®	0.20-450		

\*1gal/hr = 63.1ml/min

**Construction materials:** All 520 pumpheads are constructed of high performance engineering plastics and stainless steel to defeat chemical attack from process fluids and cleaning agents. The pumps are tough enough for the most arduous environments. Pumphead track: PPS; guard, inner/outer: polycarbonate; guard seal: Neoprene; rotor hub: 316 stainless steel; roller arms, rotor cover: PPS; rollers, main/guide: 316 stainless steel; main roller bearings: stainless steel with PTFE seals; drain port and nut: polypropylene; drain plug: Hytrel

**NOW SELECT  
YOUR DRIVE  
PAGES 14-15**

## Biotechnology

A biopharmaceutical customer in Southern California focusing on oxygen transport agents recently scrapped two of their rotary lobe pumps in favor of our new 520 LoadSure® element pumps.

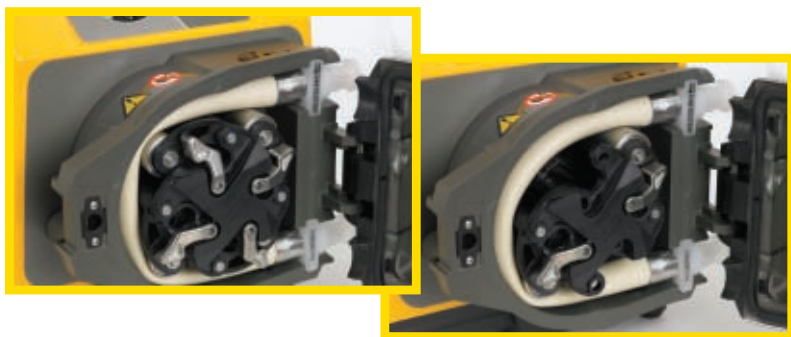
The manufacturing process of a hemoglobin-based blood substitute involves a columnar chromatography step, which removes unreacted compounds from a protein mixture. The protein needs to be pumped in at 40-50 psi and up to 1 liter per minute. The chromatography column uses 95% ethanol and is cleaned up with bleach. The customer was using a small rotary lobe pump, however two problems persisted; the bleach caused corrosion of the pump and there were concerns with contamination due to insufficient cleaning of the lobe head. Both problems were solved with the introduction of the 520UN/REM pumps. The high pressure LoadSure® elements are easy to clean and are corrosion free.



## 620 LoadSure® Elements

Like the 520, the 620 offers LoadSure® element pumpheads for positive connection and error free tube loading. Both the 620RE two roller and 620RE4 four roller LoadSure® element pumpheads are capable of pressures to 60 psi and feature retractable rollers for SIP or CIP cleaning cycles through the pump.

Sanitary LoadSure® elements are available in 12 and 17mm bore Pumpsil®, Bioprene®, Sta-Pure® and Chem-Sure® tubing with 3/4" Tri-Clamp style connectors. Each LoadSure® element is fully traceable, laser etched with part number and lot number and supplied with a certificate of conformity.

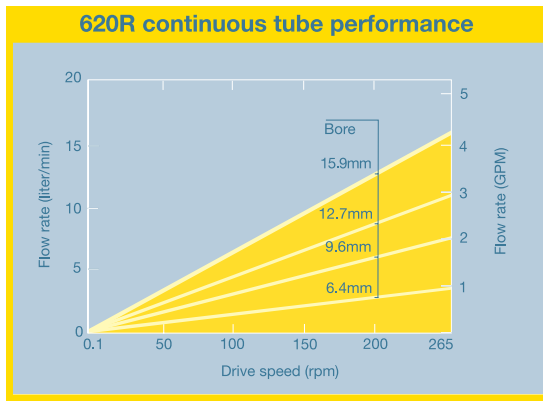


Choose two roller 620RE for maximum throughput. Choose four roller 620RE4 for low pulsation.

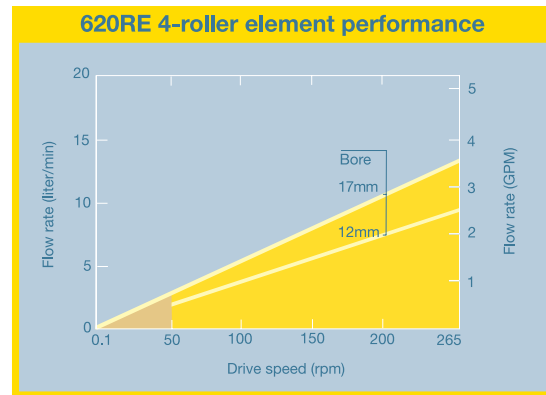
## Continuous tubing pumphead

When pressures are less than 30 psi, the 620R pumphead allows continuous source to discharge tubing connection without in-line breaks or joints. 620R accepts four tube sizes in a wide range of materials from 6.4mm to 15.9 mm bore and 3.2mm wall thickness.





620R continuous tubing, two rollers pumpheads: flow ranges, 0.1-265 rpm								
	GPM	liters/min	GPM	liters/min	GPM	liters/min	GPM	liters/min
Tube bore mm	6.4	6.4	9.6	9.6	12.7	12.7	15.9	15.9
Tube bore in	1/4	1/4	3/8	3/8	1/2	1/2	5/8	5/8
Tube number	17	17	193	193	88	88	189	189
Bioprene® TL	0.0003-0.9	0.001-3.4	0.001-1.7	0.003-6.6	0.001-2.9	0.004-11	0.003-3.2	0.01-12
Pumpsil®	0.0003-0.8	0.001-3.2	0.001-1.9	0.003-7.2	0.001-2.9	0.004-11	0.003-4.0	0.01-15
Sta-Pure®	0.0003-0.8	0.001-3.2	0.001-1.7	0.003-6.6	0.001-2.9	0.004-11	0.003-4.2	0.01-16



Note: beige portion of graphs refers to limit of 30 psi below 50 rpm

	620 pumpheads: flow ranges, 0.1-265 rpm							
	620RE two rollers pumpheads				620RE4 four rollers pumpheads			
Element bore, mm	GPM	liters/min	GPM	liters/min	GPM	liters/min	GPM	liters/min
Element bore, inch	12.0	12.0	17.0	17.0	12.0	12.0	17.0	17.0
Tri-Clamp connector size, inch	15/32	15/32	11/16	11/16	15/32	15/32	11/16	11/16
	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Bioprene® TL (elements to 30 psi)	0.001-2.6	0.004-9.8	0.003-4.8	0.01-18	0.001-2.2	0.003-8.3	0.001-3.2	0.005-12
Bioprene® TM (elements to 60 psi)	0.001-2.6	0.004-9.8	0.003-4.2	0.01-16	0.001-2.2	0.003-8.3	0.001-2.9	0.004-11
Pumpsil® (elements to 30 psi)	0.001-2.6	0.004-10	0.003-4.2	0.01-16	0.001-2.3	0.003-8.7	0.001-2.9	0.004-11
Sta-Pure® (elements to 60 psi)	0.001-2.9	0.004-11	0.003-4.8	0.01-18	0.001-2.4	0.003-9.0	0.003-3.4	0.01-13

**Construction materials:** All 620 pumpheads are designed for ultimate impact and corrosion resistance. Pumphead track: powder coated aluminum LM24; guard, inner/outer: Grilamid TR55/Polyurethane PBA; rotor hub, roller arms: Fortron 1140L4 (PPS); rotor cover: DuPont Hytrel G5544; rollers, main/guide: stainless steel/nylon; main roller bearings: carbon steel; continuous tube clamp set: polypropylene

**NOW SELECT YOUR DRIVE PAGES 14-15**

## Brewing

Ringwood Brewery produces high-quality, cask-conditioned beer which is highly regarded by discriminating real ale drinkers.

The ability to sustain precise, accurate, repeatable product flow with minimal agitation was the primary factor in the adoption of a Watson-Marlow Bredel 620 series peristaltic pump for finings dosing.

Ringwood Brewery's Bob Mavin says "Practical experience has shown we made the right choice for a vital duty. The pump is product-friendly, hygienic, easy-to-clean and simple-to-maintain. Operating in a damp, wet, washdown environment is no problem, but above all accuracy is 100% reliable."

In all there are eight Watson-Marlow Bredel pumps in service at Ringwood Brewery where volumetric accuracy and reliability combined with a gentle, low shear pumping action and simple, glandless, valveless, low-maintenance construction has led to their use on a variety of duties.



## 720 LoadSure® Element pumpheads

The 720RE and 720REX extension LoadSure® element pumpheads are available in 12.7mm, 15.9mm, 19.0mm and 25.4mm bore Pumpsil®, Bioprene® and Sta-Pure® elements with 3/4" PVDF Tri-Clamp style connectors (1" Tri-Clamp style on the 25.4mm element). Each LoadSure® element is fully traceable, laser etched with part number and lot number and supplied with a certificate of conformity.

### Continuous tubing for joint-free flow from source to discharge

The 720R and 720RX extension pumphead allow continuous source to discharge tubing connection without in-line breaks or joints. The 720 accepts five tube sizes in a wide range of materials from 9.6mm to 25.4mm bore and 4.8mm wall thickness. Flow rates to 66.6 liters/min. Pressures to 30 psi.



### LoadSure® element pumpheads ensure correct tube loading every time

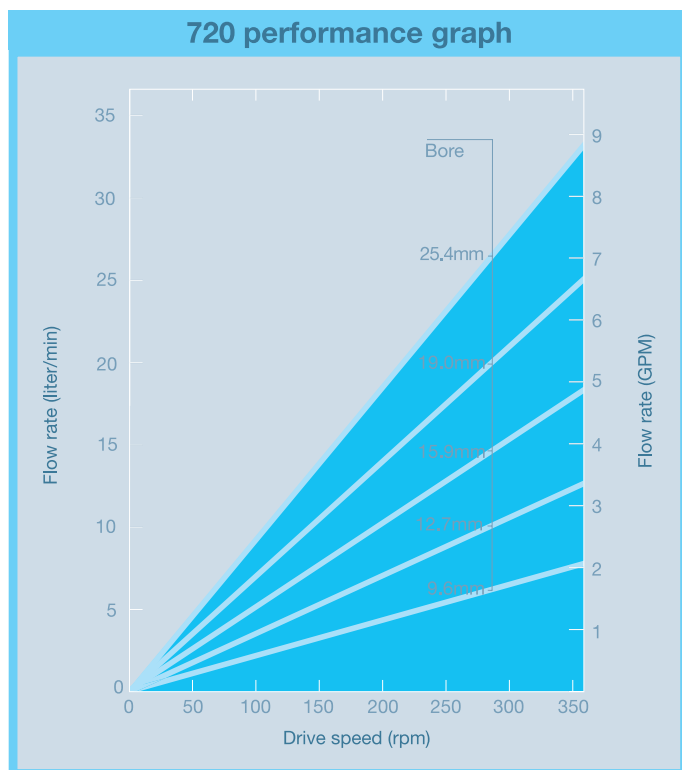
Flow rates up to 66.6 liters/min. Pressures up to 30 psi. Elements are available in Bioprene®, Pumpsil®, and Sta-Pure®.



liters/min, (17.6 GPM) with pressures to 30 psi

720 pumpheads: flow ranges, 360rpm									
	720R continuous tubing					720RE elements			
Tube or element bore, mm	9.6	12.7	15.9	19	25.4	12.7	15.9	19	25.4
Tube or element bore, inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
Tube number	193	88	189	191	92	-	-	-	-
Tri-Clamp connector size, inch	-	-	-	-	-	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
liters/min	0.002-6.9	0.004-13.2	0.005-18.3	0.007-25.2	0.009-33.3	0.004-13.2	0.005-18.3	0.007-25.2	0.009-33.3
GPM	0.0005-1.8	0.001-3.5	0.001-4.8	0.002-6.6	0.003-8.8	0.001-3.5	0.001-4.8	0.002-6.6	0.003-8.8

Flow listed is per channel. Double your flow by adding a 720RX or 720REX extension pumphead as shown below.



**Construction materials:** All 720 pumpheads are designed for strength and durability. Pumphead track: epoxy coated aluminum; drive shaft: stainless steel 440C; rotor end plates: aluminum; cradle assembly, track: aluminum epoxy finished; central shaft: EN24 steel; rollers: MOS2 filled Nylon 6 (Nylatron); springs, spindles: stainless steel

**NOW SELECT  
YOUR DRIVE  
PAGES 14-15**

## Food

Red Mill Snack Foods have helped increase their production and ensure the high quality of their products by installing Watson-Marlow Bredel 700 series pumps to meter flavorings. Unfailing, repeatable accuracy ( $\pm 0.5\%$ ) and ease of cleaning, added to reliability and low maintenance, are the keys to the long term success of Watson-Marlow Bredel peristaltic pumps at the Red Mill production facility. The pumps handle some thirty different flavorings used in the extensive range of extruded maize snacks.

The low shear pumping action and the ability to totally enclose the pumped media within the tube, ensures optimum levels of hygiene and product integrity. The ability to sustain volumetric accuracy ensures that consistent dosage of the flavoring is maintained at all times. At the end of a shift the pumps are reversed to scavenge the lines and return residual product to the mixing kettles, so saving waste.



## Watson-Marlow Bredel peristaltic pumps offer a complete range of features to suit sanitary application needs.

- Maintenance free and brushless DC motors are efficient and reliable. There's no carbon dust from motor brushes unlike other pumps.
- Tough, corrosion resistant powder-coated housing and NEMA 4X water-tight enclosures are perfect for sanitary and wash-down environments.
- Speed controls up to 3,600:1 and multiple tubing sizes give metering capability of several thousands to one. Sophisticated microprocessor control with 0.1 rpm resolution ensures reliable metering accuracy.
- Manual control for plug-and-go, auto control for straightforward setup of analog remote control, or digital control using RS485 offer comprehensive functionality for easy production system integration.
- Pump scale-up has never been easier. The 520, 620 and 720 pumps have the same footprint; they are interchangeable on the line. With similar keypad layout and menu options, no further operator training is required; if you know one pump, you know them all.
- Value for life: the tube is the only consumable; unbeatable tube life; no accessories; minimal maintenance; and a five-year warranty.



### Drop-in diaphragm or lobe pump replacement

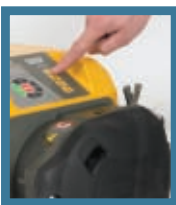
- Tubing is the only consumable. No valves, seals, ball checks, or rotors to clean, unclog, or replace
- Variable speed control with an unrivaled 0.1 rpm resolution for precise metering is built right in. No separate panels or ancillaries required. Simple and easy installation
- Minimal maintenance means less downtime, less downtime means more productivity. A cost effective solution for production
- High efficiency motors means less power consumption



# Choose from three levels of control

## SN: when only manual control is needed

520SN, 620SN and 720SN are the simplest version of control. Just plug it in and switch on. They offer low cost of ownership, simple, accurate metering and one-key keypad access to all major controls.



- Manual control: 9-key display pad
- Calibration to display flow rate
- MemoDose for easy repetitive discrete volume dispensing



## UN: with analog and remote control

520UN, 620UN and 720UN bring auto control functionality. They offer a manual keypad and remote control with analog speed inputs and status outputs. The pump settings are configurable and can be password-protected

- Analog speed control
- Industrial logic remote control
- Analog speed feedback



## DuN: the ultimate pump for production process

The 520DuN, 620DuN and 720DuN offer ultimate control of the range. Everything the SN and UN can do and so much more. With board interface capabilities the pump can be controlled through a PC, PLC or other plant process controller. A numeric keypad makes manual control truly simple, too: just type in the flow rate or speed you need.

- Digital network control with RS485
- Comprehensive calibration with a choice of flow units
- Two levels of PIN-secure process protection
- Twin analog inputs for simultaneous flow adjustment

## 520DiN and 620DiN for dosing

- Accurate dosing to  $\pm 0.5\%$
- Dosing triggered by keypad, remote signal or additional footswitch, handswitch or proximity switch
- Output batch records for cGMP requirements
- Calibration while dispensing

Store up to 50 dispensing programs for immediate use, complete with all parameters: batch size, dose size, flow speed and dosing interval. You can even save the ramp and drip settings. Ask for our dispensing catalog for information on our complete range of dispensers.



# Clean and reliable

Advanced technology and design underlie Watson-Marlow Bredel sanitary pumps' long life of quality service.

Our reliability record is maintained by features such as brushless DC drive, a toughened LCD screen and a rugged membrane keypad. The chemical resistance of the whole range outlasts our competition; using a powder-coated NEMA 4X casing that outperforms stainless steel when exposed to aggressive fluids and cleaning agents.

## Speed scaling

Programmable twin analog inputs allow flow pacing to be coupled with downstream quality feedback. The second input over-rides the main speed control, making stroke adjustment on a diaphragm pump redundant. Drop-in diaphragm pump replacement could not be simpler.

## Accuracy

Class-leading flow control up to 3,600:1 and simple, accurate configuration mean that your flow will match your needs precisely. Couple that with tube bores from 0.5mm to 25.4mm and you have a range of unbeaten versatility.



## PIN-secure process protection

Customize your pump setup to your precise validated process needs and lock it. With twin Pin-secure Process Protection, top-level PIN-code holders retain full control. Calibration can also be released to production staff with second-level PIN access.



## Operator safety

Operator safety comes first, with sturdy metal or impact-resistant guards and drain ports for safe disposal of spillages. Tool lockable or electronic guard switches are standard on all pumps. Optional leak detection is available for all models.

## NEMA 4X protection

All sanitary pumps meet the criteria for IP66 and NEMA 4X classification: they are secure against high-pressure washdown. NEMA 2 wipe-down models are also available in the 520 and 620 series.

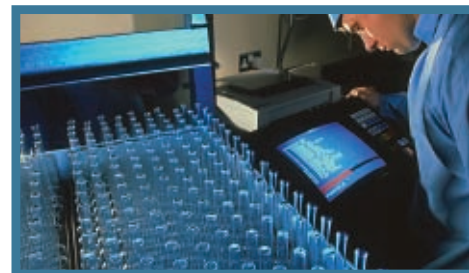
## Status outputs

Four configurable relay outputs. Monitor Run/Stop; Rotation direction; Auto/Manual operation; general fault alarm; automatic shut-down if the guard is opened; leak-detected shutdown.



## RS485

Full industrial-standard connectivity with RS485 and easy-wire relays for permanent connection to control systems including PC and PLC.



<b>Control range</b>	520N: 0.1-220 rpm; 620N: 0.1-265 rpm; 720N: 0.1-360rpm
<b>Voltage/frequency</b>	Filtered 100-120V/200-240V 50/60Hz 1ph ±10% of nominal voltage. A well regulated electrical mains supply is required along with cable connections conforming to the best practice of noise immunity
<b>Maximum voltage fluctuation</b>	
<b>Installation category (overvoltage)</b>	II
<b>Power consumption</b>	520N: 135VA; 620N: 250VA; 720N: 350VA
<b>Full load current</b>	520N: <0.6A at 230V; <1.25A at 115V; 620N: <1.1A at 230V; <2.2A at 115V; 720N: <1.5A at 230V; <3.0A at 115V
<b>Eprom version</b>	Accessible through pump software

<b>Enclosure rating</b>	IP66 to BS EN 60529; Equivalent to NEMA 4X to NEMA 250* (indoor use). Suitable for heavy industrial, process and harsh environments. The drive uses a Gore membrane vent to equalize the pressure inside the enclosure and to prevent ingress of water and corrosive vapors.
<b>Operating temperature</b>	5C to 40C, 41F to 104F
<b>Storage temperature</b>	520N: -40C to 70C, -40F to 158F; 620N, 720N: -25C to 65C, -13F to 149F
<b>Maximum altitude</b>	2,000m, 6,560ft
<b>Humidity (condensing)</b>	10% - 100% RH
<b>Noise</b>	520, 620 <70dB(A) at 1m, 720 <85dB(A) at 1m

# Select your pump control features

Feature	520DuN 620DuN 720DuN	520UN 620UN 720UN	520SN 620SN 720SN
<b>Manual control</b>			
Run/stop; speed adjustment; forward/reverse; max key for rapid priming and purging; auto-restart; keypad lock, flow calibration in metric units	•	•	•
Choice of flow rate display; metric and imperial units	•		
Numeric keypad for entry of speed, flow or PIN	•		
Cumulative flow display	720DuN		
<b>Remote control</b>			
Run/stop direction change; auto/manual mode; leak detector input (via contact closure or 5V TTL to 24V industrial logic)	•	•	
<b>Analog speed control</b>			
Software programmable inputs; 0-10V, 1-5V or 4-20mA	•	•	
Second analog or keypad key scaling	•		
<b>Digital network control</b>			
Full RS485 network connectivity for process control through PC or PLC	•		
<b>Process security</b>			
Basic security code to protect setup		•	
PIN-secure process protection: two-level PIN access	•		
<b>Pump status outputs</b>			
Analog frequency output of pump speed	•	•	
Four 24V change-over relay pump status outputs	•	•	
4-20mA pump speed feedback	•		
<b>MemoDose</b>			
Accurate, easy, single-shot dispensing	•	•	•
Remote switch operation of MemoDose	•	•	
<b>Calibration</b>			
Simple calibration to display the flow rate as well as the rotation speed	•	•	•
Comprehensive calibration for precise metering. Choice of flow units	•		

**NOW SELECT YOUR TUBE**

## Specifications

	Width	Depth	Height	Weight
520N with 520R pumphead	276mm 10 <sup>7</sup> / <sub>16</sub> in	407mm 16in	158mm 6 <sup>1</sup> / <sub>4</sub> in	11.48kg 25lb 5oz
620N with 620R pumphead	280mm 11in	448mm 17 <sup>5</sup> / <sub>16</sub> in	305mm 12in	20.5kg 45lb 3oz
720N with 701R pumphead	280mm 11in	508mm 20in	305mm 12in	25.0kg 55lb 2oz

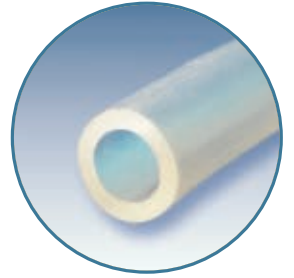


NEMA 4X  
NEMA 2  
IP66

# Choosing the PERFECT tube for all of your applications

Watson-Marlow Bredel is the only peristaltic pump manufacturer in the world to manufacture its own tubing, optimizing our tubing tolerances and formulation to deliver the best process pump performance. In a peristaltic pump, the tubing largely dictates pump and system performance: Its restitution creates suction, its strength resists pressure, its flex resistance determines pumping life, its bore defines the flow rate, its wall thickness controls pumping efficiency and its purity protects your product from contamination. Watson-Marlow Bredel offers tubing in six food or pharmaceutical grade materials and over forty sizes, giving an extraordinary range of chemical and application capability.

**Pumpsil® platinum cured silicone** tubing is manufactured by Watson-Marlow Bredel in our own silicone-dedicated ISO1644-1 class 7 (class J/10,000) cleanroom. Developed specifically for biopharmaceutical application, Pumpsil® carries full biopharmaceutical certification USP Class VI and ISO10993 and complies with FDA 21 CFR177.2600 for food contact. Pumpsil® is entirely free of 2,4 DCBA and other leachables associated with peroxide cured silicone and is post-cured to remove linear and cyclic siloxanes, cytotoxic materials which can leach out of other manufacturers' non-post-cured platinum cured tubing. Pumpsil® has an ultra-smooth bore to control protein binding and bacterial growth, making it ideal for production applications where there is long term contact with the process fluid. Our LaserTraceability™ provides an ink-free indelibly etched record of part number, lot number and use by date right on the tubing. This means that lot traceability is carried through from box to bag to the tube itself. Working temperature range -20C to 80C. Translucent. Autoclavable



**Pumpsil-D platinum cured silicone** tubing manufactured by Watson-Marlow Bredel adds ultimate dispensing performance to the high purity attributes of Pumpsil®. Pumpsil-D is formulated with a superior flex memory that doubles the accuracy of dispensed volumes compared to standard platinum-cured silicone tubing. Fewer pump calibrations are needed so maximizing process efficiency. USP Class VI certified and complies with FDA 21 CFR177.2600 for food contact. Working temperature range -20C to 80C. Translucent. Autoclavable.



## LoadSure® Elements with Ultimate Traceability

LoadSure® elements are available with a range of performance characteristics for many applications – but all share features designed to work at their best in demanding sanitary processes.

World-standard sanitary connectors in PVDF complete an assembly which welcomes autoclaving and steam in place procedures for cGMP. There are no wetted metallic components, cutting the risk of chloride attack.

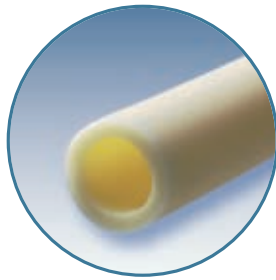




**Bioprene®** is Watson-Marlow Bredel's exclusive thermoplastic elastomer.

Manufactured to high standards in its own thermoplastic-dedicated ISO1644-1 class 7 (class J/10,000) cleanroom, Bioprene® offers the best combination of purity, chemical compatibility and long pumping life .

Bioprene is USP Class VI certified and meets FDA requirements 21 CFR 177.2600 and USDA standards for food handling. High, medium and low pressure grades are available. Working temperature range 5C to 80C. Autoclavable. Can be sterilized by ethylene oxide.



**Chem-Sure®** is a high performance composite of PTFE and a high-grade fluoroelastomer – offering extraordinary chemical resistance, long life and very high burst pressures. Chem-Sure® is USP Class VI and food grade approved making it suitable for foods and pharmaceuticals as well as aggressive chemicals.



**Marprene®** is our high performance general purpose tube. This thermoplastic elastomer parallels Bioprene's chemical compatibility and long pumping life. Marprene® is ideal for general purpose pumping or food handling and is highly resistant to oxidizing agents such as ozone and peroxides and sodium hypochlorite. Meets FDA requirements 21 CFR 177.2600 and USDA standards for

food handling. Working temperature range 5C to 80C. Autoclavable.



**Sta-Pure®** has a unique composite construction of platinum cured silicone in an expanded PTFE lattice giving it superior burst resistance compared to nonreinforced silicone. With pumping life 18 times longer life than silicone tubing, it delivers tremendous flow stability over long production cycles. USP Class VI certified. Working temperature range 0C to 80C. Opaque white. Autoclavable, SIP and CIP compatible.



	Pumpsil®	Pumpsil-D	Bioprene®	Sta-Pure®	Chem-Sure®	Marprene®
LoadSure® elements	•		•	•	•	
Continuous tubing	•	•	•			•
Meets or exceeds USP Class VI requirements	•	•	•	•	•	
FDA regulations CFR 177.2600 for contact with food	•	•	•	•	•	•
European Pharmacopoeia 3.1.9	•	•	•	•	•	
ISO 10993	•	•	•	•	•	
Up to 10,000 hours pumping life			•	•	•	•
High pressure capability (30-100 psi)			•	•	•	•
Low gas permeability			•			•
Wide chemical resistance			•		•	•
LaserTraceability™	•	•				
High dispensing accuracy		•		•	•	
Lot traceable from raw material to finished product	•	•	•	•	•	

## Assured validation

Validating a sanitary process is made easy with LoadSure® elements. All element wetted parts are USP Class VI and ISO 10993 certified with a laser-etched lot number. LoadSure® elements and continuous tubing are supplied with a certificate of conformity and a validation pack is available upon request.



## Checking your choice with an immersion test

Always conduct an immersion test before choosing a tube material for critical applications. Immerse a short length of the tubing or rubber sample (always available from Watson-Marlow Bredel or its distributors) in a closed container of the fluid for 48 hours and then examine for signs of attack, swelling, embrittlement or other deterioration.

**United States of America**  
 Telephone 800 282 8823  
 Fax: 978 658 0041  
 Email support@wmbpumps.com  
 www.watson-marlow.com

**Belgium**  
 Telephone +32 (0) 2 481 60 57  
 Fax: +32 (0) 2 481 60 58  
 Email info@watson-marlow.be

**Brazil**  
 Telephone +55 11 4616 0404  
 Fax: +55 11 4616 0403  
 Email info4brazil@watson-marlow.com  
 www.watson-marlow.com.br

**China**  
 Telephone +86 21 6485 4898  
 Fax: +86 21 6485 4899  
 Email info@watson-marlow.cn  
 www.watson-marlow.com.cn

**France**  
 Telephone +33 (0) 2 37 38 92 03  
 Fax: +33 (0) 2 37 38 92 04  
 Email info@watson-marlow.fr  
 www.watson-marlow.fr

**Germany**  
 Telephone +49 (0) 2183 42040  
 Fax: +49 (0) 2183 82592  
 Email info@watson-marlow.de  
 www.watson-marlow.de

**Italy**  
 Telephone +39 030 6871184  
 Fax: +39 030 6871352  
 Email info@watson-marlow.it  
 www.watson-marlow.it

**Korea**  
 Telephone +82 (0) 2 525 5755  
 Fax: +82 (0) 2 525 5764  
 Email support4k@watson-marlow.co.uk  
 www.watson-marlow.co.kr

**Malaysia**  
 Telephone +60 (3) 5635 3323  
 Fax: +60 (3) 5635 7717  
 Email sales@my.SpiraxSarco.com

**Netherlands**  
 Telephone +31 (0) 10 462 1688  
 Fax: +31 (0) 10 462 3486  
 Email info@watson-marlow.nl

**South Africa**  
 Telephone +27 11 796 2960  
 Fax: +27 11 794 1250  
 Email info@wmbpumps.co.za

**Sweden**  
 Telephone +46 8 556 556 00  
 Fax: +46 8 556 556 19  
 Email info@watson-marlow.se  
 www.watson-marlow.se

**United Kingdom**  
 Telephone +44 (0) 1326 370370  
 Fax: +44 (0) 1326 376009  
 Email support@watson-marlow.co.uk  
 www.watson-marlow.co.uk

The information contained in this document is believed to be correct, but Watson-Marlow Bredel accepts no liability for any errors it contains and reserves the right to alter specifications without notice.

Typical flow rate on all graphs printed varies with tube material, discharge pressure, suction and viscosity.

**WARNING** These products are not designed for use in and should not be used for, patient connected applications.

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## Watson-Marlow Bredel ...

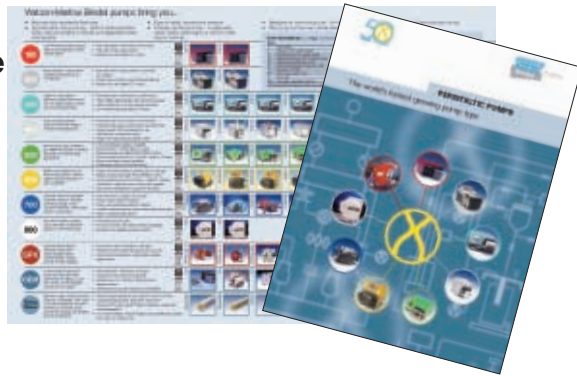
With 60% fewer roller passes than our competitors, our pumps deliver 2 1/2 times the tube life.

So the best pump really does cost less. Call us for the proof. It all adds up to -

Value for life

### Overview Brochure

A quick and easy outline of the complete range of process, laboratory and OEM pumps offered by Watson-Marlow Bredel.



### Dispensing brochure

Covers our extensive range of dispensing pumps for benchtop and production filling.



### Industry sector brochures

Whatever your industry, find out how Watson-Marlow Bredel can improve your process.

- Pharmaceutical and Biotechnology
- Food and Beverage
- Brewing
- Water and Waste
- Print and Packaging
- Chemical
- Ceramics
- Pulp and Paper
- Paints and Pigments
- Engineering



### Tubing brochures

- Pumpsil® platinum-cured tubing
- Pumpsil-D precision dispensing elements geared for the biopharm industries



Call 1-800-282-8823 for further information on the sanitary pumps and tubing range including technical data sheets or log on to our web site: [www.watson-marlow.com](http://www.watson-marlow.com) to view details on our complete peristaltic pump range

Watson-Marlow Bredel Pumps  
 37 Upton Drive, Wilmington, MA 01887  
 Tel: 1-800-282-8823 Fax: 1-978-658-0041  
 support@wmbpumps.com