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**WATSON
MARLOW** PUMPS
Bredel

OEM

Peristaltic Pumps for Engineers



If you use pumps, we can improve your products and save you money



Custom-Built is standard

If you want a good fit, go to a store with a range of sizes and styles. For a perfect fit, go to a tailor.

It's the same with pumps. Watson-Marlow Bredel make thousands of pump types, covering a huge range of sizes, flows, pressures and accessory options. We're also the world's largest custom peristaltic pump source for OEM applications, supplying units designed in the closest co-operation with our customers, so that the pump becomes a perfect part of their products.

Peristaltic pumps could not be simpler. They are nature's way to transfer fluid: Squeeze a tube filled with fluid between your fingers, slide them along and the fluid moves. The only contact with the fluid is the tube. It is the perfect pumping principle.

- No pump or fluid contamination
- Ideal for shear-sensitive, abrasive and aggressive fluids
- Accurate and repeatable flow rates
- Self-priming, dry-running
- No valves, seals or glands
- Reversible
- Nothing to service: a new tube creates a new pump

Alternatives such as lobe pumps, diaphragm pumps, piston pumps, gear pumps – we have them all beaten, in industries from gold-mining to biotechnology, paints to polymers, food processing to medical equipment manufacture.

If your product needs to move a fluid, choose perfection: a custom-made peristaltic pump from Watson-Marlow Bredel. We supply the pump the customer wants on time every time – and we are the tubing specialists too.



Christopher Gadsden
Managing Director

Our approach

Finding the best solution

All Watson-Marlow Bredel pumps are a product of our mechanical, electronic and fluid engineering expertise that has been developed over 50 years of being the technological leader in peristaltic pumps.

With this knowledge, and experience we will consult with you, to help you select from our wide array of standard products, or custom engineer a solution for you. Our goal is to always get you the right pump for your application.

Peristaltic pumping lends itself to a staggering range of applications, and no company has more off-the-shelf solutions than Watson-Marlow Bredel. Our standard options combine to create literally thousands of different pump configurations to precisely match your specifications.

Thousands of Standard Options

- **Accurate pumping from microlitres to 80m³/hr**
- **25 basic pumphead types with 130 variants**
See pages 4-9
- **59 tube and hose sizes with continuous tubing, or quick change element offerings**
- **15 tube and hose materials**
- **Over 300 drive speeds and voltages**
- **AC, DC, stepper, BLDC motors to optimise your controllability**
- **2 to 10 roller pumpheads to match your flow and precision needs**
- **1 to 48 channels to match simultaneous dispensing needs**

Custom Pump Experts

If a standard pump is not perfect for your need our world class team of development engineers can design a solution that will. Customisation can range from a simple modification to an existing design, or a completely new design from scratch.

While you concentrate on the rest of your product design, our pump experts transform your pumping specification into design concepts and prototypes – testing and refining them until you have the best-engineered solution to your pumping needs.

Customisation Examples

- **Pumps modified to accept customer specified tubes**
- **Extrusion of custom tube sizes**
- **Tube element pumps**
- **Drive speeds**
- **Pumphead materials**
- **Pumphead colours**
- **Custom mounting panels**
- **Add or delete channels**
- **Add or delete rollers**
- **Pumphead only**
- **Safety interlock switch**
- **Private label products**
- **Custom software**
- **Value engineered products**
- **Custom casework**
- **Completely new pump designs**



Prescribing the pump for the purpose is vital before custom work begins



- World leader in peristaltic pumps and tubing
- Purpose written software
- Built to Order
- Every product can be traced to its assembler
- International standards exceeded

OEM design in practice

Every OEM application is different – it has to be: every customer's requirement is different. But each project receives the same attention to detail and cost control. Watson-Marlow Bredel Pumps works hand-in-hand with customers to bring peristaltic pumping expertise to a variety of different applications and duties.

Typical Applications

- Food and Beverage flavourings
- Medical and Diagnostic Equipment
- Fermentation and Cell Culture
- Semiconductor
- Environmental Sampling
- Agriculture
- Filtration
- High throughput drug screening
- Printing
- Concrete pumping and pigment dosing

Typical Pump Duties

- Waste Removal
- Transfer
- Metering
- Dispensing/Dosing
- Sampling



Cased product solutions



It starts with an OEM enquiry, and ends with speedy packaging and dispatch, plus unrivaled after-sales service

Your Partner in Development

When Watson-Marlow Bredel receives an OEM enquiry, that is the start of a close business relationship.

Investigative research

An engineer will assess the customer's exact requirements.

Prototyping and testing

Once the application is understood, we will design and put a pump in your hands to test in your device. We will conduct in-house testing in co-operation with you.

For example, we might supply an existing product so that you can check that the pumphead does the job before we begin development of a new drive.

Preproduction and optimisation

When the principle is established, we can work with you to adjust the design to maximise value-for-money. Examples include private labelling and materials changes to achieve price targets.

Full scale production

We will meet your full production needs, delivering pumps on time, every time.

Our quality systems: supply chain excellence

Watson-Marlow Bredel products are at the cutting edge of pump technology, using design, manufacturing and quality systems to match.

Built-to-Order: any product can be quickly manufactured and shipped, once an order is received.

Our factory consists of lean-manufacturing cells equipped to build and quality-test from start to finish. Skilled engineers respond to sales orders, retaining management, ownership and responsibility for products even after they are shipped. Every pump can be traced to the person who built it.

This system shortens lead times. We respond quickly, and lessen the customers need to carry stock, reducing overheads.





From our client list ...

ABB Instrumentation Ltd
Abbott Laboratories
Advanced Tissue Sciences
Akzo
Amersham Biosciences
Analytical Technology Inc.
Astra Zeneca
Art Robbins Instruments
Avery Dennison
Avery Pharmaceuticals
Bausch & Lomb
Baxter Healthcare
Bayer Corp
Beckman Coulter Inc
Becton Dickinson
Biosciences
Bee Robotics Ltd
Biotronic AB
Boule Medical AB
Bristol Myers Squibb
Buehler Ltd
Caliper Technologies
Cambridge Consultants Ltd
Cardiovention Inc.
Cellex Biosciences Inc.
Cetac Technologies
Ciba-Giegy
Coating Industries
Crelab AB
Curon Medical Inc.
Dohrmann Enterprises Inc.
Dow-Corning
Eastman
Essen Instruments
Exxon
Fialab Instruments Inc.
Fresenius Medical Care
Genomic Solutions Inc
Gilson Medical Electronics
Grainger Integrated Supply
Hach Company
Harris & Bruno International
Hemo Cleanse Inc.
Hibernicor Llc
Ideo Product Development
Inc.
Intel Corp
Isco
KBiosystems Limited
Lachat
Lam Research Corp
Lancer Corporation
Lockheed Martin
Man Roland Inc
Matrix Microscopes
McCain Foods
Merck-Sharp-Dohme
Mikura Ltd
Minnetronix
Miox
Molecular Devices
Nanogen Inc.
Niro Aeromatic Division
O'Hara Technologies Inc.
OI Analytical
Organ Recovery Systems
Osram
Parker Technologies Inc.
Perkin Elmer Life Sciences
Pharmacia-UpJohn
Roche International
Sanmina-Sci
Scilog Inc.
Siemens Canada Ltd
Soletron USA,Inc
Solomon Colors
Stedim Inc
Stryker Endoscopy
Sycamore Technologies Inc
Tetra-Pak Chilled Carton Inc.
Thermo Electron
Thermo Genesis Corporation
Thermo Separation Products
Transgenomic Inc.
USDA
Vector Corp.
W.R.Grace & Co.
YSI Incorporated
Zevex Inc.



Banks of pumps on test like these guarantee that Watson-Marlow Bredel quality is second to none

Whether the solution is an off-the-shelf pump or a fundamental redesign, we work with the customer to ensure that the result is exactly what he requires.

Our standards

We conduct our business ethically, and stand by our word, our recommendations and our products.



Model	Flow rates up to	Multi-channel	Page
400/A	Up to 30ml/min	No	5
400/VM	Up to 34ml/min	Yes	6
400/DM	Up to 36ml/min	Yes	4
400/GM4	Up to 59ml/min	Yes	7
400/N	Up to 83ml/min	Yes	6
400/D	Up to 83ml/min	Yes	4
400/B1	Up to 182ml/min	No	4
400/M	Up to 182ml/min	Yes	5
102R	Up to 212ml/min	No	6
400/R1	Up to 1050ml/min	No	7
313D, 314D	Up to 3000ml/min	Yes	7
520R	Up to 4750ml/min	No	8
501RL	Up to 3000ml/min	No	8
620R	Up to 17 litre/min	No	9
701R	Up to 33 litre/min	Yes	9
Bredel	Up to 1135 litre/min	Yes	9

The selection of products on these pages hints at the breadth and depth of our capabilities. For OEM customers, they provide starting points for an infinite range of possibilities.

400/B1



Compact, instrument-quality, single-channel low-flow pump

Flow up to 182ml/min, speeds to 350 rpm
 Pressure up to 3 bar (45 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 70mm x 65mm (2.75in x 2.55in)
 Single channel, six tube sizes available from 0.5-4.0mm ID

- Four roller pumphead
- Accepts continuous tube in six standard sizes
- Spring loaded adjustable occlusion for tube life and pressure performance

Performance with common tube sizes:

Tube ID	0.5mm	0.8mm	1.6mm	2.4mm	3.2mm	4.0mm
ml/rev	0.016	0.037	0.13	0.26	0.41	0.52



400/D

Compact, instrument-quality, multi-channel low-flow pump

Flow up to 83ml/min per channel, speeds to 250 rpm
 Pressure up to 3 bar (45 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 70mm x 65mm (2.75in x 2.55in)
 2 or 3 channels, four tube sizes available from 0.5mm-3mm ID

- Four roller pumphead
- Spring loaded adjustable occlusion for tube life and pressure performance



Performance with common tube sizes:

Tube ID	0.5mm	1.0mm	2.0mm	3.0mm
ml/rev	0.013	0.05	0.18	0.33

400/DM



Compact, instrument-quality multi-channel, low-flow manifold pump

Flow up to 36ml/min per channel, speeds to 100 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 70mm x 65mm (2.75in x 2.55in)
 2 or 3 channels, 20 tube sizes available from 0.13-2.79mm ID

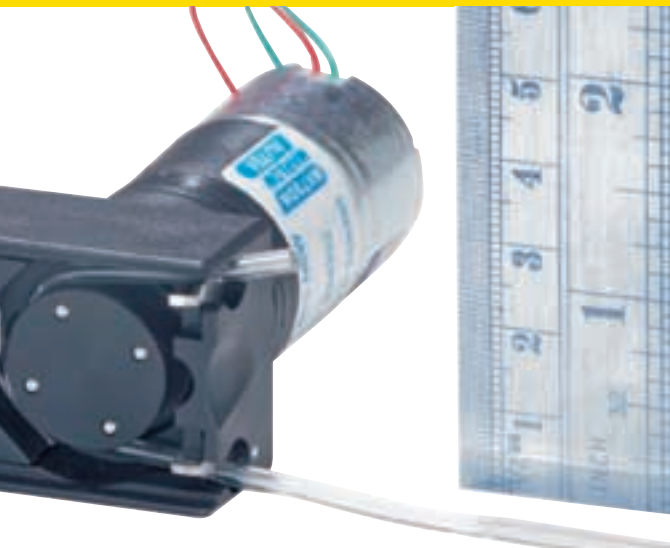
- Four roller pumphead accepts three tab manifold tubes
- Spring loaded adjustable occlusion for superior tube life

Performance with common tube sizes:

Tube ID	0.13mm	1.50mm	1.02mm	1.52mm	2.05mm	2.79mm
ml/rev	0.001	0.014	0.055	0.12	0.21	0.36



400/A



The smallest low-flow instrument-quality peristaltic pump on the market

Flow up to 30ml/min, speeds to 290 rpm
 Pressure up to 2 bar (30 psi)
 Drives DC, stepper motor
 Dimensions 31mm x 48mm (1.2in x 1.9in)
 Single channel, 20 tube sizes available from 0.25-2.06mm ID

- Four roller pumphead
- Spring loaded track for superior tube life and precision
- Opening the cover lifts the track for easier tube loading

Performance with common tube sizes:

Tube ID	0.25mm	0.51mm	0.76mm	1.02mm	1.22mm	1.52mm	2.06mm
ml/rev	0.0025	0.0097	0.020	0.034	0.046	0.068	0.104

400/M

Economy, compact enclosed low-flow pump

Flow up to 182ml/min, speeds to 350 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 65mm x 65mm (2.55in x 2.55in)
 1, 2, 3 or 4 channels, six tube sizes available from 0.5-4.0mm ID

- Four roller fixed occlusion pumphead
- Safe and attractive enclosed design



Performance with common tube sizes:

Tube ID	0.5mm	0.8mm	1.6mm	2.4mm	3.2mm	4.0mm
ml/rev	0.016	0.037	0.13	0.26	0.41	0.52

300MC

Multi channel low flow cassette pumphead

Flow up to 53ml/min, speeds to 110rpm
 Pressure up to 2 bar (45 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 94mm x 78mm
 2, 3 and 5 channels with the option of 5 channel extension pumpheads

- Four and eight roller low pulse pumpheads
- Cassette loading, individual occlusion adjustment to allow channel to channel fine tuning
- Twenty tube sizes available from 0.13-2.79mm ID



4 Roller

Tube ID	0.13mm	0.50mm	1.02mm	1.52mm	2.05mm	2.79mm
ml/rev	0.001	0.015	0.074	0.17	0.30	0.48

8 Roller

Tube ID	0.13mm	0.50mm	1.02mm	1.52mm	2.05mm	2.79mm
ml/rev	0.001	0.013	0.060	0.13	0.22	0.33

400/N



Economy, compact twin-channel enclosed low-flow pump

Flow up to 83ml/min per channel, speeds to 250 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 65mm x 65mm (2.55in x 2.55in)
 2, 4, 6 or 8 channels, up to four tube sizes available from 0.5-3.0mm ID

- Four roller fixed occlusion pumphead
- Safe and attractive enclosed design

Performance with common tube sizes:

Tube ID	0.5mm	1.0mm	2.0mm	3.0mm
ml/rev	0.013	0.05	0.18	0.33

102R



Twin sprung roller low-flow pump

Flow up to 212ml/min, speeds to 130 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC
 Dimensions 79mm x 63mm (3.12in x 2.5in)
 Single channel, five tube sizes available from 0.5-4.8mm ID

- Spring-loaded, high accuracy two-roller rotor
- Spring tube clamps or snap-in connectors

Performance with common tube sizes:

Tube ID	0.5mm	0.8mm	1.6mm	3.2mm	4.8mm
ml/rev	0.02	0.05	0.22	0.81	1.66

400/VM



Precision instrument-quality, low-flow low-pulse manifold pump

Flow up to 34ml/min, speeds to 100 rpm
 Pressure 3 bar (45 psi)
 Drives DC, BLDC, stepper motor
 Dimensions 106mm x 106mm (4.2in x 4.2in)
 2, 3 or 4 channels, twenty tube sizes available from 0.13-2.79mm ID

- Low-pulse 10-roller pumphead
- Individual occlusion adjustment to allow channel to channel fine tuning

Performance with common tube sizes:

Tube ID	0.13mm	0.50mm	1.02mm	1.52mm	2.05mm	2.79mm
ml/rev	0.001	0.018	0.068	0.14	0.24	0.34

Custom Products

We are experts at designing and building peristaltic pumps, and custom products are our specialty.

The products shown here only scratch the surface of

Control Boards

Speed control board for 12V DC OEM pumps

DC-motor speed control boards

- Use for DC drives up to 30W, speed control ratio 20:1
- Mains power 110VAC / 230VAC or 24VDC / 22VAC
- Remote control through 0-20mA, 4-20mA, 0-10V or 0-1V
- Options CW/CCW, Start/Stop



our capabilities. If you don't see exactly what you are looking for, we can custom manufacture products to meet your needs. In many cases we may have already built a custom product that matches your application. If not, we can easily reconfigure the standard products shown – or we can even create a new design from scratch. Whether it's increasing or reducing the number of channels, changing gear ratios, or changing the number of rollers, the possibilities are endless.



400/R1

Precision instrument-quality, medium-flow single-channel pump

Flow up to 1050ml/min per channel, speeds to 350 rpm
 Pressure up to 3 bar (45 psi)
 Drives DC, BLDC, stepper motor
 Dimensions 106mm x 106mm (4.2in x 4.2in)
 1 or 2 channels, seven tube sizes available from 0.8-6.4mm ID

- Four roller pumphead
- Spring loaded adjustable occlusion for superior tube life and high pressure

Performance with common tube sizes:

Tube ID	0.8mm	1.6mm	2.4mm	3.2mm	4.0mm	4.8mm	6.4mm
ml/rev	0.06	0.20	0.50	0.86	1.3	1.8	3.0



400/GM4

Precision instrument-quality, low-flow four-channel manifold pump

Flow up to 59ml/min per channel, speeds to 100 rpm
 Pressure up to 2 bar (30 psi)
 Drives DC, BLDC, stepper motor
 Dimensions 106mm x 106mm (4.2in x 4.2in)
 4 channels, twenty tube sizes available from 0.13-2.79mm ID

- Four roller pumphead accepts two tab manifold tubes
- Spring loaded adjustable occlusion for superior tube life

Performance with common tube sizes:

Tube ID	0.13mm	0.50mm	1.02mm	1.52mm	2.05mm	2.79mm
ml/rev	0.001	0.022	0.086	0.19	0.34	0.59

313D and 314D

Stylish and versatile, flip-top medium-flow pump

Flow up to 3 litre/min, speeds to 600 rpm
 Pressure 2 bar (30 psi)
 Drives AC, DC, BLDC, stepper motor
 Dimensions 85mm x 82mm (3.37in x 3.25in)
 Stackable up to six channels, seven tube sizes available from 0.5-8.0mm ID

- Three or four roller stackable pumphead
- Quick and simple flip-top tube loading
- Custom colours available to match your design

Performance with common tube sizes:

Tube ID	0.5mm*	0.8mm*	1.6mm	3.2mm	4.8mm	6.4mm	8.0mm
3 roller							
ml/rev	0.03	0.06	0.26	1.0	2.2	3.6	5.0
4 roller							
ml/rev	0.03	0.06	0.25	0.85	1.9	3.0	4.0

* special model





520R



Heavy duty accurate and powerful medium flow pump

Flow up to 4.75 litre/min, speeds to 300 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC, brushless DC
 Dimensions 145mm x 125mm (5.72in x 5.0in)
 Single channel, eight tube sizes available from 0.5-9.6mm ID

- Two roller spring loaded rotor for optimum tube life
- Clear-view, shatter-proof guard with tool-unlocking latch
- Constructed of high-spec engineering plastics for ultimate corrosion resistance
- Rapid, simple tube loading

Performance with common tube sizes:

Tube ID	0.5mm	0.8mm	1.6mm	3.2mm	4.8mm	6.4mm	8.0mm	9.6mm
ml/rev	0.041	0.11	0.42	1.68	3.78	6.72	10.5	15.2

501RL



Spring-loaded medium-flow pump

Flow up to 3 litre/min, speeds to 300 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, DC, BLDC
 Dimensions 117mm x 112mm (4.6in x 4.0in)
 Single channel, seven tube sizes available from 0.5-8.0mm ID

- Spring-loaded, high accuracy two-roller rotor

Performance with common tube sizes:

Tube ID	0.5mm	0.8mm	1.6mm	3.2mm	4.8mm	6.4mm	8.0mm
ml/rev	0.04	0.12	0.43	1.86	4.04	6.60	10.0

SPX Hose Pumps

Watson-Marlow Bredel Pumps offers ten sizes of heavy duty industrial hose pumps, using reinforced high precision hose elements.

Flow 0.038 - 1135 litre/min
 Pressure up to 16 bar (320psi)
 Drives AC, pneumatic, hydraulic, or diesel drives 1 or 2 channels

Hose pumps are ideal for indoor or outdoor pumping of highly viscous, chemically aggressive, and abrasive fluids.

Performance

Hose ID	10mm	15mm	25mm	32mm	40mm	50mm	65mm	80mm	100mm
litre/rev	0.22	0.83	0.30	0.63	1.33	2.90	6.70	11.7	20.0

620R

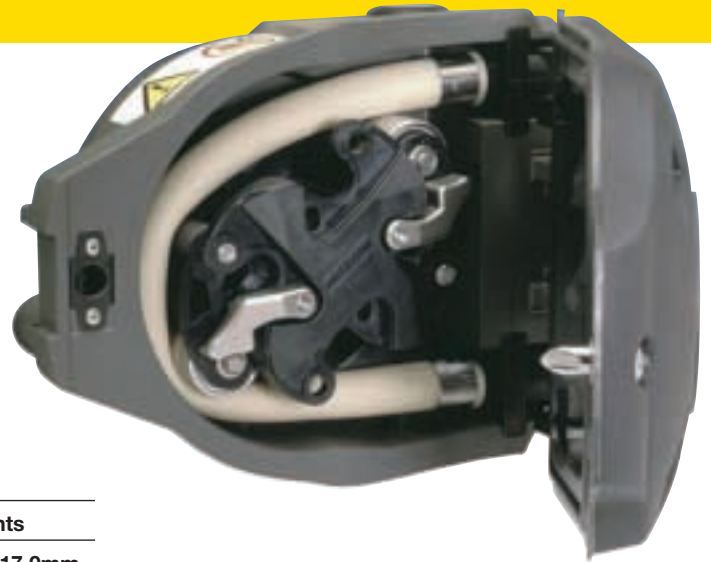
Heavy duty accurate and powerful high-flow pump

Flow up to 17 litre/min, speeds to 250 rpm
 Pressure up to 4 bar peak (60 psi)
 Drives AC, DC, BLDC
 Dimensions 259mm x 189mm (10.2in x 7.5in)
 Single channel, six tube sizes available from 6.4-17.0mm ID

- Retractable rollers for CIP or SIP cycles
- Two rollers for higher flows and four rollers for lower pulsation
- Use continuous tubing or LoadSure™ tube elements for simple one minute maintenance

Performance with common tube sizes:

Tube ID	Continuous Tubing				Elements	
	6.4mm	9.6mm	12.7mm	15.9mm	12.0mm	17.0mm
ml/rev	13.0	25.0	40.0	54.5	37.0	67.3



701R

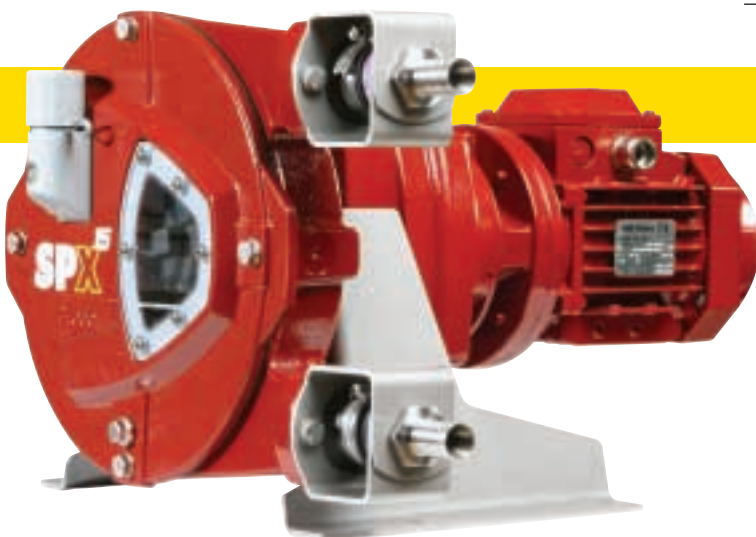
Heavy duty stackable high-flow pump

Flow up to 33 litre/min, speeds to 360 rpm
 Pressure up to 2 bar (30 psi)
 Drives AC, pneumatic
 Dimensions 210mm x 270mm (8.3in x 10.2in)
 One or two channels, five tube sizes available from 9.6-25.4mm ID

- Four geared rollers for low pulsation and optimum tube life
- Accepts continuous tubing or tube elements

Performance with common tube sizes:

Tube ID	9.6mm	12.7mm	15.9mm	19.0mm	25.4mm
ml/rev	19.4	36.1	50.0	69.4	92.5

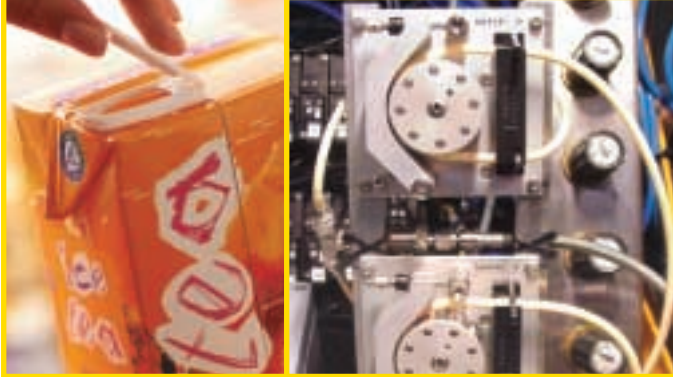


Watson-Marlow Bredel worldwide

You judge a new acquaintance by the company he keeps. Watson-Marlow Bredel supply some of the most respected names in industry worldwide, in

industries ranging from concrete cutting to medical imaging. Here are a few examples of the company we keep.

Tetra Pak



Hygiene is critical when you are handling food and drink – and for no-one more than Tetra Pak, one of the world's largest suppliers of packaging systems for milk, fruit juices and many other products.

Tetra Pak is the only international company able to provide integrated processing, packaging and distribution solutions for food manufacturing.

Tetra Pak's Chilled Systems division develops filling stations for cold products. The carton board is sterilised before folding and filling.

Watson-Marlow Bredel supplies a custom pump which sprays hydrogen peroxide on to the board before it passes through a UV-oven. When it comes out, the board is completely sterile, ready to receive the flash-pasteurised food in a sterile chamber. The result is nutritious food that stays fresh for months.

The pump uses an eight-roller rotor for low pulsation, and a spring-loaded track for accuracy and extended tube life. The pump has an IP67-protected drive for easy and effective cleaning.

Tetra Pak acknowledge Watson-Marlow Bredel contribution: "The worldwide success of Tetra Pak lies in the benefits of its aseptic technology," they say.

Even milk can now be kept safely without refrigeration. "Aseptic technology is a gentle way of processing and packaging liquid food that keeps food fresh and flavourful for a year – without refrigeration or preservatives."

The American Institute of Food Technology has named Tetra Pak's aseptic carton packaging as "the most important advance in food science in the past 50 years."

Medtronic Xomed

Medtronic Xomed Inc, a world leader in medical technology, uses Watson-Marlow Bredel pumps in XPS 2000 and 3000 Microdebrider Systems: slender cutting tools which are inserted through the nostrils in ear, nose and throat surgery to remove polyps and other unwanted tissue from the sinuses in the front part of the head. The pumps are used to circulate saline solution through the tip of the instrument for cooling and washing during the procedure.

Medtronic Xomed chose Watson-Marlow Bredel pumps for their ability to load tubing sets easily and accurately, as the tube set is discarded after each procedure. The compact design of the 313D pumphead was an advantage, and its styling complemented the rest of the instrument. Medtronic Xomed uses a standard pumphead on the original XPS 2000 system, and we supply pumpheads in a custom colour to match the design of the new model.

Each year, 2.5 million patients benefit from Medtronic's technology, used to treat conditions such as heart disease, neurological disorders, and vascular illnesses, as well as ear, nose and throat conditions.



Nothing's too delicate for a Watson-Marlow Bredel pump. Medtronic Xomed use custom 313 pumps – seen to the left of the blue appliance, right – to cool and irrigate cranial surgery



Beckman Coulter

Beckman Coulter Inc is a leading provider of instrument systems and complementary products that simplify and automate laboratory processes in all phases of the battle against disease.

The company's state-of-the-art Access® 2 immunoassay testing system is a powerful random access benchtop analyser that performs a variety of diagnostic assays. These include anaemia, cardiovascular, reproductive and thyroid conditions, infectious disease, blood viruses, skeletal conditions and tumour markers.

The Access® 2 uses a custom-designed six-channel peristaltic pump from Watson-Marlow Bredel to move samples and spent reagent to a waste collection bottle. The pump was designed to handle multiple flow streams and fit into a small space.



UK railways experience problems every Autumn when trackside trees shed their leaves. This installation uses a Watson-Marlow Bredel pump to feed gel-borne sand to the rails and increase grip for the trains



Beckman Coulter's immunoassay testing system incorporates a custom-designed pump to handle tissue samples



Watson-Marlow Bredel peristaltic pumps are used wherever quality and reliability are paramount – as here, powering coolant flow in a concrete-cutting machine in Japan. The pump is the circular housing, centre.

PerkinElmer

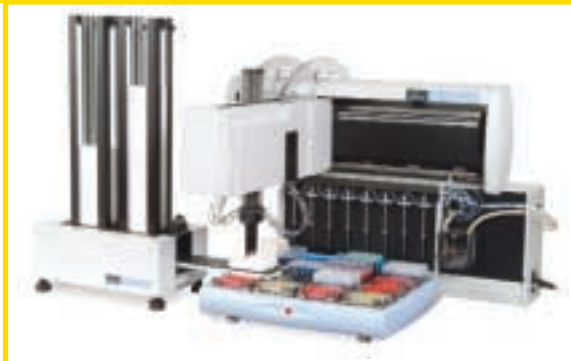
PerkinElmer Life and Analytical Sciences, leading manufacturer of life science/research instrumentation, chose Watson-Marlow Bredel peristaltic pumps for their MultiPROBE II™ robotic liquid handling systems.

Designed for high-throughput sample processing in clinical, pharmaceutical and biotechnical applications, MultiPROBE II Systems are used in

sample preparation procedures. Liquid transfers can be performed in a multi-tipped mode from any combination of laboratory containers including 384-well formats for complete assay automation.

PerkinElmer required a long-lasting pump capable of high-throughput, high-volume liquid dispensing to wash interior and exterior surfaces of sampling tips and reduce carry-over.

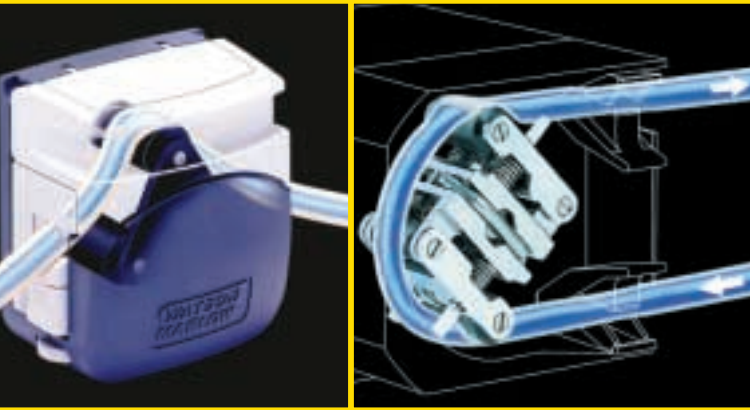
Using Watson-Marlow Bredel pumps, sample-to-sample contamination is reduced to less than 1 part in 1,000,000. The process is faster and more efficient than the alternative method of washing the tips with syringes. Extended tube life and easy serviceability allowed the company to include the pumps as a standard feature on all their MultiPROBE systems.



Installed on the UV varnish tower coater of MAN Roland R700 series printing presses, twin baseplate-mounted 701 pumps have reduced downtime and increased production speed. One pump accurately metres the water-based varnish from a container to a weir on the press, the other scavenges excess varnish for re-circulation.

Peristaltics

Compared with other positive displacement pumps, peristaltic pumps win on every count.



- They handle difficult fluids – whether shear-sensitive biological fluids or viscous sludges – with ease, as well as slurries and other suspended solids, and aggressive substances such as acids and caustics.
- They provide precision dosing and metering, without gas locking or crystallisation. Cleaning and maintenance are quick and easy. They self-prime to 9 metres (30 ft), can run dry and have no valves or seals to leak, corrode or clog.
- The duty fluid is totally contained within the tube – so there is no contamination and virtually no maintenance is needed. They serve as their own check valves, and are fully reversible.

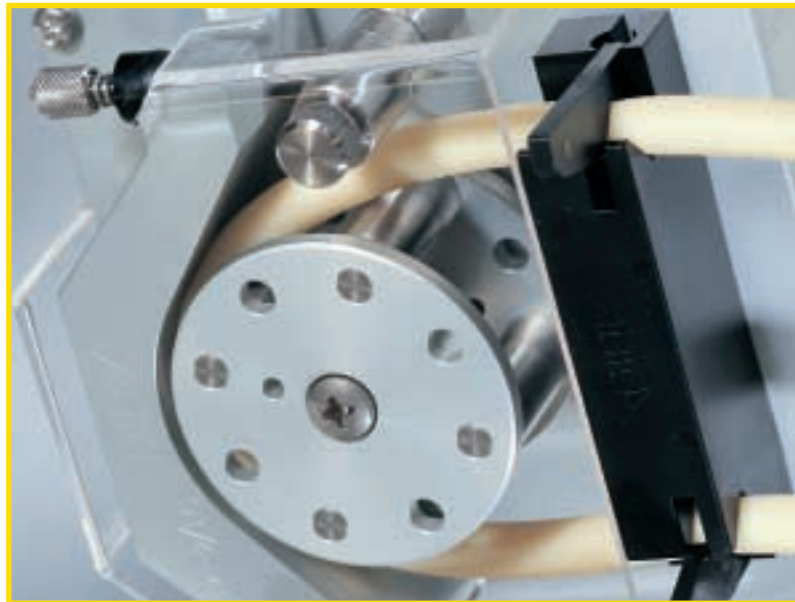


Watson-Marlow Bredel peristaltic pumps offer accurate and repeatable flow rates for transfer duties or demanding dispensing operations. Pumpheads can be ganged to provide matched or proportionate flows. They are easy to operate and maintain, and are capable of very

sophisticated control, manually or by computer, with facilities such as ramping – slow dose start and finish to avoid splashing – standard on many models.

The pumping chamber in a peristaltic pump is the pumping tube, which is occluded as each roller passes, before its elasticity reasserts itself and more fluid is drawn in. This constant flexing means that tubes have a limited life. However, that limit is a great deal less restrictive than the need for servicing and cleaning exhibited by other pumps.

For example, Pumpsil, Watson-Marlow Bredel's own platinum-cured silicone tubing, can be expected to last well over a month in normal working conditions before a simple tube change is advisable – but other pump types would require a checkover or thorough cleaning far more often. A 6.4mm bore length of our own Marprene pumping tube has an expected life of at least 10,000 hours – that's well over a year with the pump running 24 hours a day, every day. And to complete the package, tube changing takes just a few moments with all our pumps.



The peristaltic pumping principle is simple, elegant and unbeatable

Tubing range

At the heart of every peristaltic pumphead is the tube.

We have a state-of-the-art tubing plant which allows us to be a partner you can trust for guaranteed response time with the highest quality tubing on the market.



Bulk tubing supplied on reels



Class 7 (Class J/10,000) state-of-the-art production facility



Pumpsil with LaserTraceability



Marprene:

- Watson-Marlow's exclusive thermoplastic elastomer
- Very long tube life
- Highly resistant to oxidising agents
- USDA standards for food handling



Bioprene:

- Similar to Marprene, but complies with USP Class VI, and FDA requirements 21 CFR 177.2600
- Validation made easy with ink-free LaserTraceability™ – Laser-etched lot number end-to-end ensures full traceability
- Manufactured in a Class J/10,000 clean room facility



Sta-Pure:

- Composite construction of silicone and PTFE lattice
- Longer life than Silicone and the highest pressure capability



Chem-Sure:

- PTFE and high-grade fluoroelastomer create a tube with extraordinary chemical resistance
- Longer life than Silicone with greater pressure handling



Neoprene:

- Excellent resistance to abrasion and sustained pressure



PVC:

- Excellent pressure and suction performance. Low gas permeability. Glass-clear

Pumpsil:

- Silicone is the standard laboratory tubing used for small bore sizes
- Ultra-smooth bore reduces protein binding and bacterial growth
- Validation made easy with ink-free LaserTraceability™ – Laser-etched lot number end-to-end ensures full traceability
- Thoroughly post-cured to minimise leachables or extractables
- Complies with USP Class VI, and FDA requirements 21 CFR 177.2600
- Manufactured in a Class J/10,000 clean room facility
- Immediate availability of standard and custom sizes from 15m boxes to 150m spools

To find out more about Watson-Marlow Bredel tubing, log on to www.pumpsil.com



Pump Series **Flow Rates** **Put a peristaltic in your process**

100	Single channel, low flow pumps. Fixed or variable speed.	1µl/min - 53ml/min	101U
200	Near pulseless, multi-channel pumps with up to 32 channels.	0.6µl/min - 22ml/min	205U
300	NEW Compact, single or multi-channel laboratory pumps with manual, remote, analogue, RS232 or dispensing control.	2µl/min - 2.2 litre/min	323U
400	Instrument-quality, ultra-precise, single and multi-channel pumps with manual or process control.	1µl/min - 1050ml/min	405U
500	Superb range of IP31 and IP66 NEMA 4X rated pumps for science and industry as well as fixed and variable speed close-coupled pumps.	10µl/min - 4.4 litre/min	520S
600	IP66 mid-flow industrial pumps. Fixed or variable speed.	50ml/min - 18.3 litre/min	620U
700	IP55 industrial pumps with manual or auto control, single or twin channel.	1.6 litre/min - 66 litre/min	704U
800	High flow hygienic pumps with full CIP and SIP capability.	2 litre/min - 133 litre/min	840
SPX	Bredel: High flow industrial pumps operating at pressures up to 16 bar (230 psi).	0.3 litre/min - 1135 litre/min	SPX40
Tubing Hoses	Extensive range of tubing ensures chemical compatibility. USP Class VI and FDA approvals. Precision machined, reinforced hoses provide flow stability and excellent suction performance.		
	<ul style="list-style-type: none"> • Twelve tubing materials in bore sizes 0.13mm to 25.4mm • Autoclavable Marprene, Bioprene, STA-PURE, Chem-Sure and Pumpsil (platinum-cured Silicone) 		Tubing



FLOW RATES

All flow rates given in this catalogue were obtained pumping water at 20C (68F) with zero suction and delivery heads. Marprene or Bioprene tubing to obtain the 400/600 series flow rates. All other flow rates were obtained using Bredel NBR hoses.

STANDARDS

CE Meets all relevant directives
 Watson-Marlow Bredel's policy is to provide spare parts for all products for a minimum of seven years from discontinuation. The ability to implement this policy is not entirely within Watson-Marlow Bredel's control and cannot be guaranteed, but every effort will be made to honor this policy.