

# Design Engineer's Guide to Peristaltic Technology

Key Advantages and Benefits

*Value for life*



**WATSON  
MARLOW** PUMPS  
Bredel

# OEM design in practice

## Typical applications



## MEDICAL AND CLINICAL DEVICES

- Endoscopic irrigation and washing
- Dental equipment
- Analysers
- Disinfection machines



## PRINTING

- Handling flexographic inks
- Offset sheet handling UV varnish
- Ink jet cartridge refilling



## FOOD

- Hot and cold beverage dispensing
- Metering sauces and syrups
- Dispensing coffee flavourings



## BIOPHARMACEUTICALS

- Cross-flow filtration skids
- Fermenters/Bioreactors
- Buffer feeds

# Key Benefits

- No pump or fluid contamination
- No valves, seals or glands
- Accurate and repeatable flow rates
- Easy installation, operation and maintenance
- Reversible flow direction
- Self priming and dry running

## ABOUT WATSON-MARLOW BREDEL

As the world's largest OEM peristaltic pump company, we have spearheaded the development of peristaltic pump technology for fifty years, and reached far beyond our medical origins into critical process and industrial pump applications.

Our company culture has established itself on quality, service and knowledge delivering superbly engineered pumps that are unmatched in terms of functionality, styling and reliability.

New product developments such as LoadSure elements, cased drives with 2200:1 drive speed control and high pressure tubing grades have revolutionised the performance and application of peristaltic pumps.

Dedicated OEM Project Engineers bring this expertise right to the heart of our OEM customer base delivering a faster track through their own product development cycles. Our OEM customers know we deliver the very best peristaltic pump value for life their money can buy.

## THE RIGHT PUMP FOR YOU

Watson-Marlow understands that choosing the right pump and the best supplier are important decisions for any OEM or a design engineer. Whole life costs, reliability and maintenance requirements all need to be considered.

Our team will work will help you to select the right peristaltic pump and we guarantee that you'll benefit from:

- Guaranteed performance
- Contribution to long-term success and profit
- Value for life

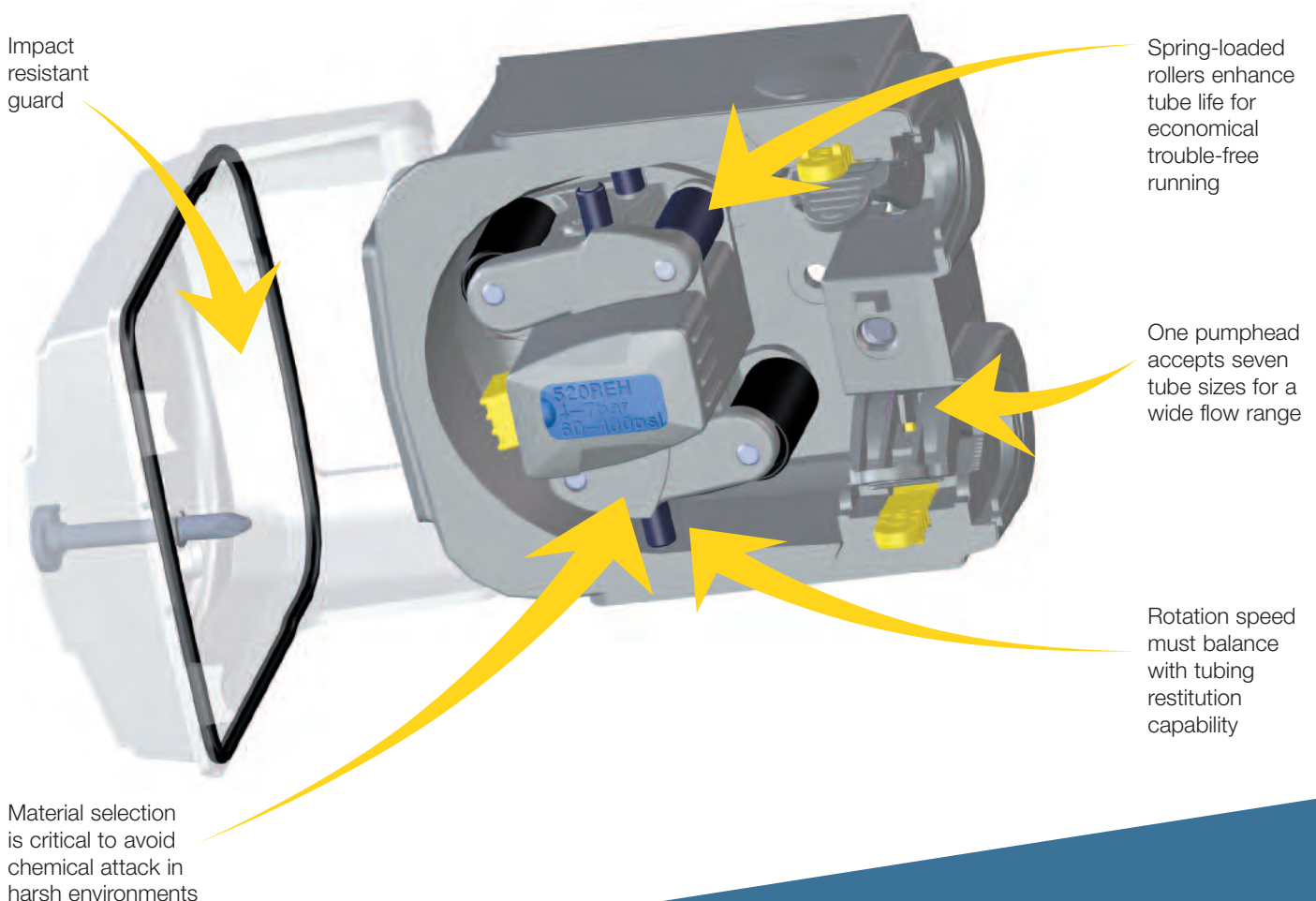


## Companies who are already benefiting from Watson-Marlow's expertise

Tetra Pak, ABB, Bausch & Lomb, Roche, Perkin Elmer, Olympus, Beckman Coulter, Bee Robotics, McDonalds, Sartorius, Dunkin Donuts, KaVo, Portec Rail, McCain, HP Invent, Dade Behring, Hach, Intel, SIG, Roche, 3M, Mectron, Heidelberg, Man Roland, Abbot Laboratories

*Value for life*

### DIAGRAM OF 520R PUMPHEAD



Watson-Marlow's sales engineers bring a wealth of design experience to your project team, lowering the risk and cost of your development program.

# Watson-Marlow Product Development Cycle

Watson-Marlow's specialist project engineers will guide you through each of the three stages of our OEM product development cycle. We work with you to select a pump that meets your requirement, budget and timescale – exactly.

## PRODUCT DEVELOPMENT CYCLE

### DEVELOPMENT

Rapid prototyping techniques are adopted to speed up design development.

Designs incorporate Design For Manufacture requisites to ensure assembly consistency and minimum labour/build time thereby maximising cost efficiency.

### PRE-PRODUCTION

Pre-production samples are critical. This allows us to check for assembly (DFA) capability of the design.

Accelerated life testing jigs can be introduced at this stage to test a year's service life.

Tubing configurations can stay on test right through this process to develop accurate projections of pump performance and tube life. This is critical information your customers.

### PRODUCTION

Watson-Marlow are your design partners. Once you reach the production stage, we guarantee:

- Product quality at an agreed cost and on time
- Kanban supply agreements to enable just-in-time manufacture and avoid stocking costs
- Warranty agreements are extendable
- On site support commissioning assistance is available
- We will support your customers that use our pumps

Peristaltic technology ensures high accuracy pumping of all fluid types including high viscosities and abrasives.

## Peristaltic Technology - How It Works

The most effective engineering solutions are often the simplest – and peristaltic technology is no exception. Peristaltic pump action is created by compressing the tube between rotating rollers and a track. In between each roller pass, the tube recovers to create a vacuum and draws in fluid.

Sanitary OEM's know we offer the most hygienic, low shear pump by design that it is possible to produce, and for industrial OEM's we bring only one wearing/fluid contact part and that is superbly robust and chemically resistant.

Our extensive range of tubing will cost effectively handle any aggressive/abrasive/shear sensitive fluid/sludge that needs to be metered, dosed or just transferred.

These pump type attributes combine to make the peristaltic pump market the fastest growing positive displacement pump market today.

*Value for life*



### LOW MAINTENANCE

Scheduled maintenance is limited to an occasional tube change, which takes only a few minutes and can be carried out by unskilled operators. This incredible low maintenance requirement ensures that Watson-Marlow's technology delivers the best value over the whole life of the pump.

### MINIMUM FAILURE RATE

Peristaltic pumps minimise the potential failures of other pump types and installation time due to:

- No dry run sensors
- No check valves in piping or artificial back-pressure valves
- No flow meters because the pump itself is more accurate
- No expensive metallurgy, for example hastalloy
- No strainers



### CUSTOM DESIGN DEVELOPMENT

Although the principle of the peristaltic pump is simple, optimising designs to achieve correct tube occlusion is complex.

We use computer solid modelling systems to understand pump performance in our customers' fluid systems. This allows us to optimise the installation to achieve the highest levels of system performance. Rapid prototyping then brings the complete design to life – allowing you to see how world-class peristaltic pump technology will benefit your application.

Our highly skilled engineers are also able to design roller configurations, tube fitting methods, pump enclosures and drive mountings in a range of construction materials to suit your specific requirements.

**Watson-Marlow's sophisticated supply service is followed by the most comprehensive pump after sales and support service in the world.**

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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.

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Members of the Spirax-Sarco

Engineering Group

**PUMP SERIES**

**FLOW RATES**

<b>100</b>	Low flow single channel pumps. Fixed and manual/auto control variable speed.	1µl/min - 53ml/min	101FR 
<b>200</b>	Near pulseless, multi-channel pumps with up to 32 channels.	0.6µl/min - 22ml/min	205S/CA 
<b>300</b>	Single or multi-channel benchtop pumps with manual, remote, analogue, RS232 control and accurate dispensing.	2µl/min - 3 litre/min	323E/D 
<b>400</b>	Ultra-compact scientific pumps for low flow single or multi-channel applications	1µl/min - 610ml/min	401U/D1 
<b>500</b>	Superb range of IP31 and IP66 pumps for science and industry as well as fixed and variable speed close-coupled pumps.	0.4µl/min - 4.4 litre/min up to 7bar	520S/R 
<b>600</b>	<b>NEW</b> IP66 mid-flow process pumps with full clean-in-place and steam-in-place capability	50ml/min - 18.3 litre/min	620S/R 
<b>700</b>	<b>NEW</b> IP66 high flow pumps for use with continuous tubing or LoadSure elements. Three phase motors, ATEX rated drives or pneumatic	0.22 litre/min - 4,000 litre/hr	720U/R 
<b>800</b>	High-flow hygienic pumping using USP Class VI Bioprene tubing or STA-PURE tubing.	2 litre/min - 8,000 litre/hr	825 
<b>SPX</b>	High-flow high-pressure industrial pumps with unique patented direct coupled design. Duplex and CIP models available.	0.3 litre/min - 80m <sup>3</sup> /hr	SPX40 
<b>OEM</b>	A wide range of instrument quality and industrial OEM pumpheads for fitting to users own drives, or with faceplate-mounted motor options.	0.01µl/min - 33 litre/min	100 
<b>TUBING HOSES</b>	Extensive range of tubing ensures chemical compatibility. USP Class VI and FDA approvals. Precision machined, re-inforced hoses provide flow stability and excellent suction performance. <ul style="list-style-type: none"> <li>• Twelve tubing materials in bore sizes 0.13mm to 25.4mm</li> <li>• Autoclavable Marprene, Bioprene, STA-PURE, CHEM-SURE and Pumpsil Silicone (platinum-cured) with LaserTraceability</li> <li>• Five hose materials including Natural Rubber, Nitrile NBR, Bioprene Hypalon and EPDM from 10mm to 100mm</li> </ul>		Tubing  Hoses 