Sanitary process pumps
secure · accurate · intuitive
Your product is contained within a validated single-use fluid path—the tube

- 120 flows between 0.001 to 190 ml/min
- 530 flows between 0.04 ml/min to 3.5 L/min
- 630 flows between 0.001 to 19 L/min
- 730 flows between 0.002 to 55 L/min

Unrivalled accuracy with simple-to-use HMI requiring minimal key presses to reduce chances of costly errors

Ultimate process security with a 3-level PIN lock

Ultimate controllability with manual, remote, analogue and digital communication, plus PROFIBUS

Maintaining product integrity with visual status indication and an intuitive user interface

875,000:1 flow control range, with flow proportional to pump speed

Why Watson-Marlow makes the right pump for you

Watson-Marlow Fluid Technology Group is unique in being able to work with you at every process step to ensure your fluid transfer requirements are achieved. Whether performing gentle transfer of live cells or flavouring addition, we have a solution.

Peristaltic pumps play an increasingly important role in the biopharm industry, where they are used for handling valuable and delicate fluids without contamination. The pumped fluid is totally contained within the tube, providing complete isolation of the fluid.

Four pump ranges enable benchtop microlitre flows to higher capacities up to 33 L/min, with the equivalent accuracy and methods of control across the range.

Low shear

The extremely low shear pump action allows you to move product without degradation or damage.

120, 530, 630 and 730 peristaltic pumps share the same functionality to enhance compliance with cGMP and ensure final product quality

Constant contact materials across the complete range, minimising validation

Pumps to take you from research to production
**Buffer and media preparation**

Watson-Marlow is unique in being able to work at every process step to ensure your critical fluid transfer requirements are achieved.

Buffers are critical to maximising product retention in downstream bioprocessing. At this stage, the value of the product has increased significantly. The pumps used for handling buffers must deliver accurate flows with intuitive operation to avoid costly mistakes.

Large volumes of buffer are often required, so pumps must offer the option to be easily scaled-up using the same validated contact materials.

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**Buffer and media preparation**

**Fermentation**

Superior flow stability, providing accurate and repeatable process control, preventing non-conformance and maintaining cGMP

Flexible and scalable, without changing contact materials or losing performance, ensuring the process remains controlled and repeatable at every scale.

Single-use fluid paths eliminate cross-contamination, with risks further mitigated by the use of high purity, USP Class VI validated contact materials.

---

**Harvest**

Our suite of peristaltic pumps meets a range of requirements from benchtop applications to full production.

Functionality suits process needs and supports full integration with other process equipment. This allows you complete process scaling, using the same technology and validation throughout.

Valuated single-use fluid paths eliminate the risk of cross-contamination, while facilitating aseptic processing.

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**Purification**

Downstream purification demands processing equipment that will not damage or degrade products.

The non-contacting, gentle action of our peristaltic pumps ensures product cannot be damaged by high fluid velocities or contact with mechanical parts.

Watson-Marlow pumps are suitable for a range purification processes—clarification, concentration, including ultrafiltration, diafiltration and chromatography.

Low shear and very low pulsation must be maintained across the filters in purification. Your product is contained within a validated single-use fluid path—the tube. There are no high velocities or complex flow paths associated with lobes or other pump types.

Watson-Marlow processing pumps are easy to install and simple to use.
Quality and validation in bioprocessing

Successful bioprocessing relies on fluid handling accuracy and repeatability; guaranteed batch to batch consistency and compliance with regulations, including cGMP.

Our world-class peristaltic technology is uniquely supported with Watson-Marlow tubing and BioPure fluid path components. These are designed to interact perfectly, making us the only complete fluid path provider in the biopharmaceutical market.

Single-use fluid paths eliminate cross-contamination, with risks further mitigated by the use of high purity, USP Class VI validated contact materials.

The unimpeded flow path provided by BioPure connectors, combined with superior flow control of Watson-Marlow pumps, reduces process variation, enhances operating techniques and increases product quality.

- Process consistency and repeatability
- Unsurpassed control over the fluid path. Only Watson-Marlow tubing is validated for operation in our peristaltic pumps

Select your pump control features

<table>
<thead>
<tr>
<th>Feature</th>
<th>530Du</th>
<th>530DuN</th>
<th>630Du</th>
<th>630DuN</th>
<th>730Du</th>
<th>730DuN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual control</td>
<td>• • • • • • •</td>
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<tr>
<td>Intuitive keypad and colour display. Choice of flow rate or speed display</td>
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<tr>
<td>Full calibration with choice of flow units</td>
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<tr>
<td>Remote control</td>
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<tr>
<td>Configurable Start/Stop, leak detector and pressure switch input (via contact closure or 5V TTL or 24V industrial logic)</td>
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<tr>
<td>Direction change and auto/manual toggle input (via contact closure or 5V TTL or 24V industrial logic)</td>
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<tr>
<td>Remote operation of MemoDose (foot/hand-switch or logic input)</td>
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<tr>
<td>Four configurable digital status outputs through 24V, 30W relays</td>
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<tr>
<td>Software configurable IP31 outputs</td>
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<tr>
<td>Analogue speed control</td>
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<tr>
<td>Fully configurable inputs; 0-10V or 4-20mA, analogue outputs; 0-10V, 4-20mA</td>
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<td>•</td>
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<tr>
<td>Keypad/analogue input scaling (replacement of diaphragm pumps)</td>
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<tr>
<td>Tacho frequency output; 0-991Hz</td>
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<td>Digital communication</td>
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<td>RS485 network control</td>
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<tr>
<td>RS232 network control</td>
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<tr>
<td>Fieldbus technology</td>
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<td>PROFIBUS DP V0</td>
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<tr>
<td>Security</td>
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<td>3-level security PIN lock</td>
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</tbody>
</table>
120 Technical data

- Small and stackable pumps, saving valuable space in cleanrooms, LAF and biosafety cabinets
- Three drive options and four pumpheads for single, twin or up to three separate channels of flow
- Superior speed control up to 2,000:1
- Manual, remote or automatic control via 4-20mA or 0-10V inputs

Tube bore and flow rates 114DV, 102R and 400D1 (ml/min)

<table>
<thead>
<tr>
<th>Model and speed</th>
<th>Tube bore</th>
<th>Flow rates (ml/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5mm</td>
<td>1.6mm</td>
</tr>
<tr>
<td></td>
<td>3.2mm</td>
<td>4.8mm</td>
</tr>
<tr>
<td>114DV 10rpm</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>114DV 20rpm</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>102R 20rpm</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>400D1 1-200rpm</td>
<td>0.20-4.0</td>
<td>0.30-6.0</td>
</tr>
<tr>
<td>1200D1 1-320rpm</td>
<td>0.30-8.0</td>
<td>0.50-12.0</td>
</tr>
<tr>
<td>313D/314D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

102R Single-channel pumphead accepts continuous silicone tubing only

400D1 Accepts tubing in five sizes from 0.5 to 4.0mm internal diameter

400DM2 and 400DM3 Two and three channels accept three-bridge manifold tubing from 0.13 to 2.73mm bore

Product dimensions

530 Technical data

- Flow rates from 0.0040 to 3,300 ml/min and pressures up to 7bar
- Colour display and intuitive menu structure
- IP31 or IP66 cased pumps, manual, remote, analogue, or RS485 digital communication, plus PROFIBUS
- Four drive options and three pumpheads for single and multi-channel flows
- Precise 2200:1 speed control range

Tube bore and flow rates (ml/min)

<table>
<thead>
<tr>
<th>Tube material</th>
<th>Tube bore</th>
<th>Flow rates (ml/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpsil®, GORE® STA-PURE®, Pump Tubing - Series PCS, GORE® STA-PURE® Pump Tubing - Series PFL</td>
<td>0.004–9.5</td>
<td>0.04–97</td>
</tr>
<tr>
<td>Bioprene®, PureWeld XL®</td>
<td>0.004–9.5</td>
<td>0.04–92</td>
</tr>
</tbody>
</table>

LoadSure® element tubing flow rates (ml/min)

<table>
<thead>
<tr>
<th>Tube material</th>
<th>Flow rates (ml/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpsil®, GORE® STA-PURE®, Pump Tubing - Series PCS, GORE® STA-PURE® Pump Tubing - Series PFL</td>
<td>0.18–390</td>
</tr>
<tr>
<td>Bioprene®, PureWeld XL®</td>
<td>0.17–370</td>
</tr>
</tbody>
</table>

Product dimensions

520 Pumpheads

- Flow rates from 0.0040 to 3,300 ml/min and pressures up to 7bar
- Colour display and intuitive menu structure
- IP31 or IP66 cased pumps, manual, remote, analogue, or RS485 digital communication, plus PROFIBUS
- Four drive options and three pumpheads for single and multi-channel flows
- Precise 2200:1 speed control range

Tube bore and flow rates (ml/min)

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<th>Flow rates (ml/min)</th>
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</thead>
<tbody>
<tr>
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<td>0.04–97</td>
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LoadSure® element tubing flow rates (ml/min)

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<tr>
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</tr>
</tbody>
</table>

Product dimensions

520P/520R2 Continuous tubing pumpheads for pressures up to 2bar and flows to 3,500 ml/min

520REL/520REM/520REH LoadSure tube element pumpheads for pressures up to 2, 4 or 7bar operation

505L Very low pulse pumpheads for single or twin channel flows

313D/314D Flip top pumpheads for up to six individual channels of flow

505CA Multi-channel cassette pumphead accepts standard manifold tubing
**630 Technical data**

- Flow rates from 0.001 to 19 L/min and pressures up to 4bar
- Colour display and intuitive menu structure
- IP31 or IP66 cased pumps, manual, remote, analogue or RS485 digital communication, plus PROFIBUS
- Four drive options and two pumpheads for single and twin channel flows
- Precise 2650:1 speed control range

**620 Pumpheads**

- Twin sprung roller, continuous tubing pumphead
- Low-pulse pumphead with twin offset tracks and six stainless steel rollers for one minute maintenance
- Flow rates from 0.001 to 19 L/min and pressures up to 2000 L/hour

**730 Technical data**

- Flow rates from 7 to 33 L/min
- Colour display and intuitive menu structure
- IP66 cased pumps, manual, remote, analogue or RS485 digital communication, plus PROFIBUS
- Four drive options and two pumpheads for single and twin channel flows
- Precise 3600:1 speed control range

**Product dimensions**

<table>
<thead>
<tr>
<th>Tube bore (mm)</th>
<th>6.4</th>
<th>7.5</th>
<th>8.0</th>
<th>9.6</th>
<th>12.0</th>
<th>12.7</th>
<th>15.9</th>
<th>18.9</th>
<th>16.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Speed (rpm)*</td>
<td>0.25bar</td>
<td>0.5bar</td>
<td>1bar</td>
<td>1.5bar</td>
<td>2bar</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**720 Pumpheads**

- Continuous tubing pumphead, which can be extended to provide two channels of flow

**Product dimensions**

<table>
<thead>
<tr>
<th>Tube bore (mm)</th>
<th>6.4</th>
<th>7.5</th>
<th>8.0</th>
<th>9.6</th>
<th>12.0</th>
<th>12.7</th>
<th>15.9</th>
<th>18.9</th>
<th>16.0</th>
</tr>
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<tbody>
<tr>
<td>Drive Speed (rpm)*</td>
<td>0.25bar</td>
<td>0.5bar</td>
<td>1bar</td>
<td>1.5bar</td>
<td>2bar</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*The maximum speed is reduced at increased discharge pressures to ensure safe running of the pump

Stated performance applies to all tube materials

<table>
<thead>
<tr>
<th>Tube bore (mm)</th>
<th>6.4</th>
<th>7.5</th>
<th>8.0</th>
<th>9.6</th>
<th>12.0</th>
<th>12.7</th>
<th>15.9</th>
<th>18.9</th>
<th>16.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Speed (rpm)*</td>
<td>0.25bar</td>
<td>0.5bar</td>
<td>1bar</td>
<td>1.5bar</td>
<td>2bar</td>
<td></td>
<td></td>
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</tbody>
</table>

*Limited to speed below 125rpm. Flow rates vary with tube material, discharge pressure, sucker and viscosity.
LoadSure® pumpheads guarantee correct tube loading
Watson-Marlow LoadSure technology offers snap-fit one minute maintenance. LoadSure elements offer greater reliability, easy installation and increased productivity.

520 LoadSure pumphead
- Sanitary LoadSure® elements for 3/4 inch Tri-clamp sanitary connectors
- 7bar pressures with the 520REH. Flow rates up to 450 ml/min. Elements are available in Bioprene TH and GORE STA-PURE PCS
- 4bar pressures with the 520REM. Flow rates up to 1500 ml/min. Elements are available in Bioprene TH, GORE STA-PURE PFL and STA-PURE PCS
- 2bar pressures with the 520REL. Flow rates up to 3500 ml/min. Elements are available in Bioprene TL, Pumpsil, GORE STA-PURE PFL and STA-PURE PCS

620 LoadSure pumphead
- LoadSure® elements for sanitary 3/4 inch Tri-clamp connectors available in Bioprene TM and GORE STA-PURE PFL and STA-PURE PCS for 4bar operation and Bioprene TL and Pumpsil for 2bar operation.
- Two tube element bore sizes of 12mm and 17mm
- Highest accuracy and minimal pulsation with the 620REH’s four rollers. Highest flow rates from the 620REH’s two rollers
- Flow rates up to 13 L/min, pressures up to 4bar.

720 LoadSure pumphead
- LoadSure® elements with sanitary 3/4 inch Tri-clamp connectors available Bioprene, Pumpsil and GORE STA-PURE PCS materials
- Four bore sizes: 12.7mm, 15.9mm, 19.0mm and 25.4mm
- Flow rates from 720RE pumphead up to 2,000 L/hr flow at up to 2bar pressure. 720REX extension pumpheads offer identical performance, but at a maximum pressure of 1bar.

Pump and tubing have equal importance
It is important to recognise that the pump and tubing combination are selected to match your specific application criteria. Watson-Marlow is the only company that manufactures both the cased pumps and peristaltic tubing, which is a real advantage for customers that want to be certain that their peristaltic pump will work right first time and every time.

Tubing features
- LoadSure® elements
- Continuous tubing
- Meets USP Class VI requirements
- European Pharmacopoeia 3.1.9
- ISO 10993
- Lot traceable from raw material to finished product
- Low gas permeability
- Sterilisation by autoclave
- Sterilisation by gamma irradiation
- FDA regulations 21 CFR 177.XXXX for food contact
- EC 1935/2004 for food contact in the EU
- Wide chemical resistance
- High pressure capability 2–7bar
- High dispensing accuracy
- Up to 10,000 hours pumping life

LoadSure elements provide fast and simple tube loading every time

Pumpsil®
- Platinum-cured silicone tubing
- Single-use biopharm tubing
- Laser-etched lot traceability
- Excellent flow stability

Bioprene®
- Pharmaceutical grade thermoplastic elastomer tubing
- Long pump life
- Excellent chemical compatibility
- Fully autoclavable

PureWeld XL®
- Thermoplastic elastomer tubing
- Weldable and heat sealable
- Animal derived component free
- Consistent pump performance

GORE® STA-PURE®
- PTFE-reinforced silicone tubing
- Pressure rated up to 7bar
- Longest available tube life
- Spallation virtually eliminated

GORE® STA-PURE®
- PTFE-reinforced fluoroelastomer tubing
- High resistance to aggressive chemicals
- Pressure rated up to 4bar
- 50 times longer life than other fluoroelastomers
puresu single-use tube assemblies

Drawing on considerable single-use expertise, BioPure provides the flexibility of customised tube assemblies

Offering a broad range of validated components and configurations, with no minimum order quantity and simple, repeatable ordering to support a continuous supply chain.

Full traceability of each component is maintained throughout our assembly process and is provided as part of our detailed documentation. This ensures your tube assemblies reach you ready to use and that they meet the exacting requirements set by cGMP manufacture and validation standards.

BioPure's puresu capability provides:

- Unique support from the fluid path technology experts
- Ultimate flexibility with quick turnaround and no minimum order quantity
- Ready-to-use bioprocessing solutions, full traceability, double-bagged and irradiated as standard

<table>
<thead>
<tr>
<th></th>
<th>Research</th>
<th>Clinical trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISCOVERY</td>
<td>up to 1,000 compounds</td>
<td>PHASE 1 10 – 100 trials</td>
</tr>
<tr>
<td>PRE-CLINICAL</td>
<td></td>
<td>PHASE 2 100 – 500 trials</td>
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<tr>
<td></td>
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<td>PHASE 3 1,000 – 10,000 trials</td>
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</tbody>
</table>

BioPure

BioBarb  
BioClamp  
FlatBioEndCap  
Bio Y  
Bio Valve  
puresu

BioBarb  
Bio Y  
FlatBioEndCap  
BioEndCap  
Bio Valve  
BioClamp  
puresu
BIOTECHNOLOGY AND PHARMACEUTICAL SOLUTIONS

Watson-Marlow Fluid Technology Group
Watson-Marlow Fluid Technology Group supports its customers locally through an extensive global network of direct sales operations and distributors

wmftg.com/global