

## 520U and 520S

**NEW**

The solution for biopharm and process



We asked what industry wanted

## The pump of choice ...

Process engineers know that there is nothing more **reliable** and versatile than a Watson-Marlow peristaltic pump. The new generation 520 pumps go further. **Flow rates** to 3.5 litre/min are achieved with slow speed and large swept volume. This means long **tube life** and gentle handling of shear sensitive fluids.

The 520's **high-powered**, brushless DC motor gives it controllability from 0.1 rpm to 220 rpm with speed **accuracy** to 0.1%. It provides **precision** dosing and metering, and excellent, uninterrupted batch consistency.

Your decision is whether you need the 520S with manual control or the 520U with remote auto and analogue control. Then choose your pumphead: the new 520R2 or a range of pumpheads offering flow rates from 4 microlitres to 3.5 litres per minute, and from 1 to 48 channels.

**The 520's versatility is what makes it your pump of choice – and a world leader in whole-life value-for-money.**



Reliable, controllable and versatile. The new 520 pump is designed for **chemical process**, biotech and pharmaceutical applications.

... for process

We deliver it all ...

- **Outstanding performance**

Powerful 2.2Nm torque available in all conditions with 0.1% set speed accuracy at 220rpm. Class-leading 2,200:1 turndown, giving flow rates from 4 µl/min to 3.5 litre/min.

- **Easy to use**

Large, high-visibility speed and flow display, menu operation with on-screen help. Tactile membrane keypad with large keys for gloved use.

- **Clean and robust**

Tough cast housing with sleek, curved lines for liquid run-off and no bug traps. Smooth polyester finish is durable, corrosion-resistant and easy to clean.

- **Reliable**

Brushless DC motor and high-performance gearbox – no brushes, no carbon-dust contamination: zero maintenance. 24/7-duty rated with full software protection.

**...the quality and reliability you expect from Watson-Marlow Bredel pumps – plus a three-year comprehensive warranty.**



## Why Peristaltics?

Compared with other positive displacement pumps, peristaltic pumps win on all counts. They handle difficult fluids and suspended solids with ease, and offer sterile pumping with no risk of contamination and minimal fluid degradation. They provide precision dosing and metering, and excellent, uninterrupted batch consistency. There are no crevices and dead spots inviting residue build-up and bacterial problems. Cleaning and maintenance are quick and easy. Peristaltic pumps self-prime, can run dry, and have no valves or seals to leak, clog, corrode or replace.

... they are our finest, toughest, most versatile pumps ever.

## The pumphead that delivers ...

Outstanding performance, minimal downtime and low whole-life cost

That's what the 520R2 pumphead brings to the 520S and 520U drives.

### Long-life, gentle pumping

Spring-loaded roller arms and large, low-friction 316 stainless steel rollers provide gentle, high-flow pumping for shear-sensitive fluids.

On top of that, low running speed from the high swept volume extends tube life – offering secure and predictable long-term operation.

### Easy setup and maintenance

The large rotor hub has a clutch to allow easy loading and avoid tube twist. There's one adjustment: setting the tube clamps to grip large or small tubing. Changing the tube is the only routine maintenance. Minimum downtime means maximum throughput – and maximum value.

### ...and there's more

- Two wall thicknesses, eight materials and eight tubing sizes enable you to scale-up: benchtop to pilot to process.
- Unrivalled chemical resistance with PPS (polyphenylene sulfide) and stainless steel.
- Tough, clear, snap-shut safeguard.



... for biopharm

The 520 pump is perfect for fermentation and other **biotech and pharmaceutical applications**, as shown here in hollow fibre perfusion at Unipath, world leaders in women's health diagnostics.

- Low shear – minimal denaturing of mammalian cells
- Contamination-free pumping from the cleanest of all pump types
- Predictable pump service intervals – extending validation periods

... and we made it: a whole new pump family

## 520S/R2 manual control pumps

A pump that's simplicity itself. Just plug in and switch on.

### Manual control

Speed adjustment; run and stop; forward/reverse; max key for rapid priming and purging. Keypad lock prevents tampering or accidental change. Auto-restart for mains failure recovery. Mains switchable: 115V or 230V.

### MemoDose

Accurate, easy, single-shot dosing.

### Calibration

Simple calibration to display the flow rate or rotation speed.



## 520U/R2 analogue/manual control pumps

The 520U/R2 can be controlled from the keypad or remotely. The pump features a keypad with two-tier control: password-protected setup and separate operation keys. Logical, menu-driven setup sequences.

As well as all the features of the 520S, the 520U offers:

### Remote auto control

Digitally controlled with contact-closure, 5V TTL or 24V industrial-standard logic inputs for: run/stop, direction, auto/manual toggle, liquid detection and MemoDose trigger.

### Analogue control

Speed control by an analogue input: 0-10V or 4-20mA. Software configuration for any pump response, with full software calibration.

### Pump status outputs

0-10V or 0-1258Hz analogue output provides pump speed feedback. There are four digital 5V TTL or 24V industrial logic status outputs. Software configurable.



## Alternative pumphead options



### 505L

High accuracy, six-roller, virtually pulse-free pumphead gives flows up to 2.8 litre/min at 220 rpm. Two pumpheads can be fitted.



### 313 and 314

Flip-top, rapid-load pumphead, extendible to six channels. Three and four-roller variations. Flows to 1100 ml/min.



### 505CA

Precision, low-flow, multi-channel cassette pumphead, extendible to 48 channels. Eight driven rollers for virtually pulse-free flow.

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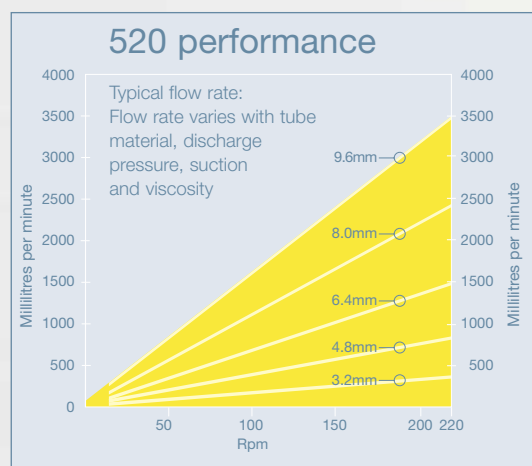
Our finest, toughest, most versatile pumps ever.

| Order information   |   |                |              |                |
|---|---|----------------|--------------|----------------|
| Pump  | Specification   | Power          | Supply       | Product number |
| 520S/R2 220 rpm   | IP31 2.4mm wt tube  | 115/230V       | 1ph 50/60 Hz | 050.7131.2LU   |
| 520S/R 220 rpm  | IP31 1.6mm wt tube  | 115/230V       | 1ph 50/60 Hz | 050.7131.10U   |
| 520U/R2 220 rpm   | IP31 2.4mm wt tube  | 115/230V       | 1ph 50/60 Hz | 050.7141.2LU   |
| 520U/R 220 rpm  | IP31 1.6mm wt tube  | 115/230V       | 1ph 50/60 Hz | 050.7141.10U   |
| *Mains leads: replace U with E, A or O if European, American or no plug is required |   |                |              |                |
| Drive   | Specification   | Power          | Supply       | Product number |
| 520S 220 rpm  | IP31  | 115/230V       | 1ph 50/60 Hz | 056.7131.00U   |
| 520U 220 rpm  | IP31  | 115/230V       | 1ph 50/60 Hz | 056.7141.00U   |
| Pumphead  | Specification   | Product number |              |                |
| 505CA4  | Four channel, eight roller cassette pumphead  | 053.4202.000   |              |                |
| 505CA8  | Eight channel, eight roller cassette pumphead   | 053.4222.000   |              |                |
| 505CA12   | Twelve channel, eight roller cassette pumphead  | 053.4242.000   |              |                |
| 505CA16   | Sixteen channel, eight roller cassette pumphead   | 053.4262.000   |              |                |
| 505CAX12  | Twelve channel, eight roller extension cassette pumphead  | 053.3442.000   |              |                |
| 505CAX16  | Sixteen channel, eight roller extension cassette pumphead   | 053.3462.000   |              |                |
| 505L  | Low pulse twin channel pumphead   | 053.4001.000   |              |                |
| 505LX   | Low pulse twin channel extension pumphead   | 053.4011.000   |              |                |
| 505LG   | Low pulse twin channel pumphead for STA-PURE tubing   | 053.4010.00G   |              |                |
| 313D/A  | Three roller pumphead with adapter plate for 500 series cased drives, for 1.6mm wall thickness tubing | 033.3401.000   |              |                |
| 313D2/A   | Three roller pumphead with adapter plate for 500 series cased drives, for 2.4mm wall thickness tubing | 033.3501.000   |              |                |
| 314D/A  | Four roller pumphead with adapter plate for 500 series cased drives, for 1.6mm wall thickness tubing  | 033.4401.000   |              |                |
| 314D2/A   | Four roller pumphead with adapter plate for 500 series cased drives, for 2.4mm wall thickness tubing  | 033.4501.000   |              |                |
| 313X  | Three roller extension pumphead for 1.6mm wall thickness tubing                                       | 033.3431.000   |              |                |
| 314X  | Four roller extension pumphead for 1.6mm wall thickness tubing  | 033.4431.000   |              |                |
| 313X2   | Three roller extension pumphead for 2.4mm wall thickness tubing                                       | 033.3531.000   |              |                |
| 314X2   | Four roller extension pumphead for 2.4mm wall thickness tubing  | 033.4531.000   |              |                |

| Tubing                                |             |              |              |              |              |              |
|---------------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
| 2.4mm wall thickness tubing for 520R2 |             |              |              |              |              |              |
| Tube#                                 | Tube bore   | Bioprene     | Marprene     | Pumpsil*     | Sta-Pure     | Chem-Sure    |
| 105                                   | 0.5mm 1/50" |              |              | 913.A005.024 |              |              |
| 108                                   | 0.8mm 1/32" |              |              | 913.A008.024 |              |              |
| 119                                   | 1.6mm 1/16" | 903.0016.024 | 902.0016.024 | 913.A016.024 | 960.0016.024 | 965.0016.024 |
| 120                                   | 3.2mm 1/8"  | 903.0032.024 | 902.0032.024 | 913.A032.024 | 960.0032.024 | 965.0032.024 |
| 15                                    | 4.8mm 3/16" | 903.0048.024 | 902.0048.024 | 913.A048.024 | 960.0048.024 | 965.0048.024 |
| 24                                    | 6.4mm 1/4"  | 903.0064.024 | 902.0064.024 | 913.A064.024 | 960.0064.024 | 965.0064.024 |
| 121                                   | 8.0mm 5/16" | 903.0080.024 | 902.0080.024 | 913.A080.024 | 960.0080.024 | 965.0080.024 |
| 122                                   | 9.6mm 3/8"  | 903.0096.024 | 902.0096.024 | 913.A096.024 | 960.0096.024 | 965.0096.024 |
| 1.6mm wall thickness tubing for 520R  |             |              |              |              |              |              |
| Tube#                                 | Tube bore   | Bioprene     | Marprene     | Pumpsil*     | Sta-Pure     | Chem-Sure    |
| 112                                   | 0.5mm 1/50" | 903.0005.016 | 902.0005.016 | 913.A005.016 |              |              |
| 13                                    | 0.8mm 1/32" | 903.0008.016 | 902.0008.016 | 913.A008.016 |              |              |
| 14                                    | 1.6mm 1/16" | 903.0016.016 | 902.0016.016 | 913.A016.016 | 960.0016.016 | 965.0016.016 |
| 16                                    | 3.2mm 1/8"  | 903.0032.016 | 902.0032.016 | 913.A032.016 | 960.0032.016 | 965.0032.016 |
| 25                                    | 4.8mm 3/16" | 903.0048.016 | 902.0048.016 | 913.A048.016 | 960.0048.016 | 965.0048.016 |
| 17                                    | 6.4mm 1/4"  | 903.0064.016 | 902.0064.016 | 913.A064.016 | 960.0064.016 | 965.0064.016 |
| 18                                    | 8.0mm 5/16" | 903.0080.016 | 902.0080.016 | 913.A080.016 | 960.0080.016 | 965.0080.016 |
| Tube#                                 | Tube bore   | Neoprene     | Butyl        | PVC          | Fluorel      |              |
| 112                                   | 0.5mm 1/50" |              |              |              | 970.0005.016 |              |
| 13                                    | 0.8mm 1/32" | 920.0008.016 |              |              | 970.0008.016 |              |
| 14                                    | 1.6mm 1/16" | 920.0016.016 | 932.0016.016 | 950.0016.016 | 970.0016.016 |              |
| 16                                    | 3.2mm 1/8"  | 920.0032.016 | 932.0032.016 | 950.0032.016 | 970.0032.016 |              |
| 25                                    | 4.8mm 3/16" | 920.0048.016 | 932.0048.016 | 950.0048.016 | 970.0048.016 |              |
| 17                                    | 6.4mm 1/4"  | 920.0064.016 | 932.0064.016 | 950.0064.016 | 970.0064.016 |              |
| 18                                    | 8.0mm 5/16" | 920.0080.016 | 932.0080.016 | 950.0080.016 | 970.0080.016 |              |



IP31



Call +44 (0) 1326 370 370  
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 pump range including technical  
 data sheets.

or log on to our web site:  
[www.watson-marlow.com](http://www.watson-marlow.com)  
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\* Pumpsil is our own brand of platinum-cured silicone tubing with LaserTraceability.  
 For pumpheads requiring different tube wall thicknesses, contact Watson-Marlow Bredel or its authorised distributors.