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**WATSON  
MARLOW**  
Pumps

## CLOSE-COUPLED PUMPS

**NEW**

*Watson-Marlow... Innovation in Full Flow*



- Fixed speed
- Variable speed
- Pneumatic models
- Continuous tubing
- LoadSure™ elements

# Close-coupled pumps



These pumps offer quality, rugged, industrial pumping, with all the pumphead features of cased drives, including a range of tubing sizes and continuous tubing and LoadSure™ element options, but at the lowest possible whole-life ownership cost.

## Varmeca variable speed drives

Denoted in the product code by the letters VI, Varmeca drives bring 10:1 speed control and constant torque to the 521 and 621 ranges. Control is by a large speed knob and forward/reverse switching. No external control wiring is required. Analogue or digital remote control models are available, and there is a Profibus option. Single-phase models and three-phase models (as engineered products) are offered. Varmeca drives can be fitted with the full range of 520 and 620 pumpheads. Duplex models (two pumpheads, indicated by an X in the product code) are available as engineered products.



## Fixed speed

Denoted by an F in product codes, three-phase fixed speed close-coupled pumps are available in all three ranges. There is a choice of drive speed in single pumphead and duplex pumps.

## Pneumatic variable speed

For installations where an air-operated drive is preferred, Watson-Marlow pneumatic pumps are available, denoted by a P in their product codes. They typically offer 5:1 control ratio at a 7 bar air supply. An exhaust silencer is fitted, and static build-up is prevented by earth bonding. A filtered and lubricated air supply is required. Pneumatic drives can be fitted with 520, 620 and 720 pumpheads. Duplex models are not available.



Inverter-controlled models are available in all three ranges, as are specially engineered variants and OEM pumps. Models with guard switching are available on 521 and 621 Varmeca and fixed speed drives.

*Watson-Marlow... Innovation in Full Flow*



# 701 options

2-4,000 litre/hr

## Drives



### 701FB

- Fixed speed: 45 rpm, 134 rpm, 232 rpm or 348 rpm. Other speeds on request
- IP55 protection
- Flow rates to 1900 litre/hour with a single pumphead
- Rugged, chemical and knock-resistant finish

**1st choice**



### 701PB

- High torque, reversible pneumatic motor
- Variable speed: 5:1 with suitable regulator; max 316 rpm
- Flow rates to 1800 litre/hour with a single pumphead
- A filtered and lubricated air supply is required
- ATEX II 2G (Zone 1) available on request

## Pumpheads

any 701 drive can be coupled to any 701 pumphead

### 701R

- Flow rates to 2000 litre/hour at 360 rpm
- Continuous tubing in five bore sizes and six materials
- Rugged, tool-unlockable track
- Driven occlusion rollers for longer tube life

### 701RE

- Patented LoadSure™ tubing elements in four sizes and five materials
- Guaranteed tube loading: you can't get it wrong; improves tube life
- Industrial Cam and Groove connectors

### 701RX

- Extension version of 701R for two-channel pumping
- Double the flow to 4,000 litre/hour

### 701REX

- Extension version of 701RE for two-channel pumping
- Double the flow to 4,000 litre/hour

701 pumpheads: maximum flow rates, close-coupled pumps, litre/hr									
rpm	701R continuous tubing					701RE LoadSure™ elements			
	9.6mm	12.7mm	15.9mm	19mm	25.4mm	12.7mm	15.9mm	19mm	25.4mm
45	53	97	140	190	250	97	140	190	250
112*	130	240	340	470	620	240	340	470	620
134	160	290	400	560	750	290	400	560	750
232	270	500	700	970	1300	500	700	970	1300
316**	370	680	950	1300	1800	680	950	1300	1800
348	410	750	1000	1500	1900	750	1000	1500	1900
360*	420	780	1100	1500	2000	780	1100	1500	2000

\*\* Pneumatic model

\* ATEX models



701RE

## Drives



### 621F

- Fixed speed: 77 rpm or 251 rpm
- IP55 protection
- Flow rates from 0.1 litre/min to 18 litre/min
- Rugged, chemical and knock-resistant finish



### 621VI

- Varmeca integral inverter offering 10:1 control ratio: 77 rpm, 146 rpm or 261 rpm maximum speeds
- Flow rates from 0.09 litre/min to 19 litre/min
- Manual stop/forward/reverse control and analogue or digital remote control. Profibus option

1st choice



### 621FX

- Duplex (twin channel) fixed speed: 69 rpm or 183 rpm
- IP55 protection
- Flow rates to 12.2 litre/min from each channel
- Twin pumpheads for balanced flow in two channels



### 621P

- High torque, reversible four-vane pneumatic motor
- Variable speed: 5:1 with suitable regulator, max 251 rpm
- Flow rates from 3.6 litre/min to 18.1 litre/min
- A filtered and lubricated air supply is required
- ATEX II 2G (Zone 1) available on request

## Pumpheads

any 621 drive can be coupled to any 620 pumphead

### 620R

- Flow rates from 0.01 litre/min to 18.1 litre/min
- Pressures to 2 bar, or to 4 bar with STA-PURE PCS tubing
- Twin-roller pumphead for high flow
- Continuous tubing in four bore sizes and seven materials
- Rugged, tool-unlockable guard
- Stainless steel occlusion rollers and bearings
- Large swept volume for long tube life

### 620RE

- Industrial Cam and Groove connectors
- Patented LoadSure™ tubing elements in two sizes and five materials
- Pressures to 2 bar, or to 4 bar with a Marprene, or STA-PURE PCS LoadSure™ element
- Increased wall thickness for enhanced pumping performance
- Guaranteed tube loading: you can't get it wrong; improves tube life

### 620RE4

- Four-roller pumphead for reduced pulsation (LoadSure™ elements only)

620 pumpheads: maximum flow rates, close-coupled pumps, litre/min

Tube or element bore (mm)	620R (continuous tubing, two rollers)				620RE (LoadSure™ elements, two rollers)		620RE4 (LoadSure™ elements, four rollers)	
	rpm							
	6.4	9.6	12.7	15.9	12.0	17.0	12.0	17.0
Neoprene	69 0.8	1.7	2.8	4.2	2.8	5.0	2.3	3.5
	77 0.9	1.9	3.0	4.6	3.0	5.5	2.6	3.8
STA-PURE PCS	146 1.8	3.7	5.8	8.9	5.8	11	4.9	7.4
STA-PURE PFL	183 2.2	4.6	7.3	11.0	7.3	13.0	6.2	9.2
Style 400	251 3.0	6.3	10	15	10	18	8.5	13
	259 3.1	6.5	10	16	10	19	8.8	13
Marprene TL	69 0.9	1.7	2.8	3.8	2.6	4.6	2.2	3.3
	77 1.0	1.9	3.0	4.2	2.8	5.1	2.4	3.6
	146 1.9	3.7	5.8	7.8	5.4	9.8	4.6	6.9
	183 2.4	4.6	7.3	9.4	6.8	12.0	5.8	8.6
	251 3.3	6.3	10	11	9.3	17	7.9	12
	259 3.4	6.5	10	11	9.6	17	8.2	12
Marprene TM	69 -	-	-	-	2.6	4.1	2.2	2.8
	77 -	-	-	-	2.8	4.5	2.4	3.1
	146 -	-	-	-	5.4	8.6	4.6	6.0
	183 -	-	-	-	6.8	11.0	5.8	7.5
	251 -	-	-	-	9.3	15	7.9	10
	259 -	-	-	-	9.6	15	8.2	11
Pumpsil	69 0.8	1.9	2.9	4.2	2.7	4.2	2.3	2.9
	77 0.9	2.1	3.2	4.7	2.9	4.6	2.5	3.2
	146 1.8	3.9	6.1	9.3	5.7	8.9	4.8	6.2
	183 2.2	4.9	7.7	11.0	7.1	11.0	6.0	7.8
	251 3.0	6.8	11	14	9.7	15	8.3	11
	259 3.1	7.0	11	15	10	16	8.5	11



620RE



## Drives



**521F**

- Fixed speed: 60 rpm, 213 rpm or 291 rpm
- IP55 protection
- Flow rates from 2.5 ml/min to 4600 ml/min
- Rugged, chemical and knock-resistant finish



**521VI**

- Varmeca integral inverter offering 10:1 control ratio: 63 rpm, 220 rpm or 275 rpm maximum speeds
- Stop/forward/reverse control and analogue or digital remote control

**1st choice**



**521FX**

- Duplex (twin channel) fixed speed: 55 rpm or 183 rpm
- Flow rates to 860 ml/min from each channel
- Twin 520R2C pumpheads for balanced flow in two channels



**521P**

- High torque, reversible four-vane pneumatic motor
- Variable speed: 5:1, max 257 rpm
- Flow rates from 11 ml/min to 4100 ml/min
- A filtered, lubricated air supply is required
- ATEX II 2G (Zone 1) available on request



**521REMC**

## Pumpheads

any 521 drive can be coupled to any 520 pumphead

### Continuous tubing models

#### 520R2C

- Flow rates up to 4600 ml/min at 2 bar
- Continuous tubing in six bore sizes and seven materials
- Clutched rotor for rapid, effortless tube loading
- Rugged, tool-unlockable guard
- Polyphenylene sulphide track to resist chemical attack
- Stainless steel occlusion rollers and bearings
- Large swept volume for long tube life

520RC pumpheads: maximum flow rates, close-coupled pumps, ml/min

	rpm	Tubing bore (mm)					
		1.6	3.2	4.8	6.4	8.0	9.6
Neoprene	55	24	95	210	380	590	860
STA-PURE PCS	60	26	110	240	420	660	950
STA-PURE PFL	63	28	110	250	440	690	1000
PVC, Pumpsil	183	81	320	720	1300	2000	2900
	213	94	370	840	1500	2300	3400
	220	97	390	870	1500	2400	3500
	257	110	450	1000	1800	2800	4100
	275	120	480	1100	1900	3000	4400
	291	130	510	1200	2000	3200	4600
	64 shore	291	120	490	1100	2000	3100
Marprene	55	23	91	200	360	570	820
	60	25	100	230	400	630	950
	63	26	110	240	420	660	950
	183	77	310	690	1200	1900	2800
	213	89	360	810	1400	2200	3400
	220	92	370	830	1500	2300	3300
	257	110	430	970	1700	2700	3900
275	120	460	1000	1800	2900	4200	
291	120	490	1100	2000	3100	4600	

### LoadSure™ element models

#### 520REHC

- As 520R2C construction
- Flow rates up to 560 ml/min at **7 bar** constant pressure
- Push-fit industrial connectors
- Patented LoadSure™ tubing elements in three materials

#### 520REMC

- As 520R2C construction
- Flow rates up to 1900 ml/min at **4 bar** peak pressure
- Patented LoadSure™ tubing elements in two sizes and four materials

#### 520RELC

- As 520R2C construction
- Flow rates up to 4600 ml/min at **2 bar** peak pressure
- Patented LoadSure™ tubing elements in three sizes and six materials

520RELC, 520REMC, 520REHC LoadSure™ element pumpheads: maximum flow rates, close-coupled pumps, ml/min

rpm	520RELC: Neoprene, STA-PURE PFL, Pumpsil, Style 400			520REMC: Marprene™ and STA-PURE PFL		520REHC: Marprene TH STA-PURE PCS
	3.2mm	6.4mm	9.6mm	3.2mm	6.4mm	3.2mm
54	95	380	860	91	360	110
60	110	420	950	100	400	120
63	110	440	1000	110	420	130
206	360	1500	3300	350	1400	420
213	370	1500	3400	360	1400	440
220	390	1500	3500	370	1500	450
257	450	1800	4100	430	1700	530
275	480	1900	4400	460	1800	560
291	510	2000	4600	490	2000	600

EU Directive 94/9/EC, commonly known as the ATEX directive, carries obligations to the person who places equipment on the market in EU territory for use in potentially explosive environments. All of Watson-Marlow's ATEX pumps have been rated as Group II, Category 2 equipment, intended for use in gas-based environments only. ATEX pumps are available in 521, 621 and 701 ranges.

## 501DF/RLA

- Flow rates to 1800 ml/min
- Fixed speed: 62 rpm, 223 rpm or 281 rpm
- ATEX II 2G (Zone 1) 0.18kW 3-phase 50Hz industrial drive
- 501RLA pumphead: pressures to 2 bar, (1 bar with 6.4mm and 8.0mm tubing) 1.6mm wall continuous tubing in seven bore sizes
- IP55 protection



## 501DF/RL2A

- 501RL2A pumphead: for higher pressures using STA-PURE PCS. 2.4mm wall tubing in six bore sizes for enhanced pumping performance



## 501DV/RL2A

- Flow rates from 0.29 ml/min to 1600 ml/min
- Variable speed ball drive variator: 7 rpm – 250 rpm
- ATEX II 2G (Zone 1) 0.25kW 230/400V 3-phase 50Hz industrial drive
- 501RL2A pumphead: for higher pressures using STA-PURE PCS or STA-PURE PFL. 2.4mm wall continuous tubing in six bore sizes for enhanced pumping performance
- IP55 protection

501RLA and 501RL2A pumpheads: maximum flow rates, ATEX pumps, ml/min

rpm	Tube bore (mm)						
	0.5	0.8	1.6	3.2	4.8	6.4	8.0
62	2.6	7.6	26	120	250	390	620
223	9.3	27	95	410	900	1400	2230
250	10	31	110	470	1000	1600	2500
281	12	34	120	520	1100	1800	2810

## 621DF/RA and 621DF/REA

- Flow rates from to 18 litre/min
- Fixed speed: 77 rpm or 251 rpm
- ATEX II 2G 0.37kW 3-phase 50Hz industrial motor/gearbox
- Pressures to 2 bar
- 621DF/RA twin-roller pumps for continuous tubing
- 621DF/REA twin-roller pumps for LoadSure™ elements
- For pressures to 4 bar, use a 621REA pumphead with a Marprene or STA-PURE PCS element, or a 620RA pumphead with STA-PURE PCS tubing



## 621DF/RE4A

- Four rollers for reduced pulsation
- IP55 protection

## 621DV/RA

- Flow rates from 0.5 litre/min to 18 litre/min
- Variable speed ball drive variator: 7 rpm – 250 rpm
- ATEX II 2G (Zone 1) 0.25kW 6-pole 230/400V 3-phase 50Hz TEFC electric motor
- Pressures to 2 bar, 3.2mm wall continuous tubing in four bore sizes
- IP55 protection, 24 hour duty rated
- Two year full warranty

## 621DV/REA

- Pressures to 4 bar, LoadSure™ tubing elements in two bore sizes

620 pumpheads: maximum flow rates, ATEX pumps, litre/min

rpm	620R (continuous tubing, two rollers)				620RE (LoadSure™ elements, two rollers)		620RE4 (LoadSure™ elements, four rollers)		
	6.4	9.6	12.7	15.9	12.0	17.0	12.0	17.0	
Marprene TL	77	1.0	1.9	3.1	4.2	2.8	5.2	2.4	3.6
LoadSure™ elements	251	3.3	6.3	10	11	9.3	17	7.9	12
Marprene TM	77	–	–	–	–	2.8	4.5	2.4	3.2
LoadSure™ elements	251	–	–	–	–	9.3	15	7.9	10
Pumpsil, Neoprene STA-PURE PCS	77	0.92	2.1	3.2	4.7	3.0	4.7	2.5	3.3
STA-PURE PFL	251	3.0	6.3	10	15	9.7	15	8.3	11
Marprene TL	77	0.92	1.9	3.1	4.7	3.1	5.6	2.6	3.9
LoadSure™ elements	251	3.0	6.3	10	15	10	18	8.5	13
Marprene TL	250	3.3	6.3	10	11	9.3	17	7.9	12

## 701DFB/RA

- Flow rates to 2,000 litre/hour
- Fixed speed: 112 rpm or 360 rpm
- Three-phase ATEX II 2G (Zone 1) motor
- Continuous tubing in five sizes and six materials

## 701DFB/REA

- As 701DFB/RA
- LoadSure™ tubing elements in four sizes and five materials

## 701DFB/RA/RXA and 701DFB/REA/REXA

- As 701DFB/RA
- Extension pumpheads for 701DFB drive to double the flow rates

## 701DVB/R and 701DVB/RE

- LoadSure™ tubing elements in four sizes and five materials
- Variable speed ball variator: 7-350 rpm



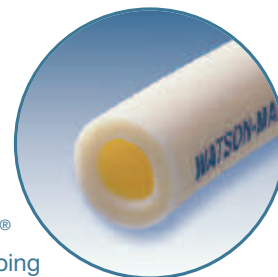
720 pumpheads: flow ranges, ATEX pumps, litre/hr

rpm	701R continuous tubing					701RE LoadSure™ elements			
	9.6mm	12.7mm	15.9mm	19mm	25.4mm	12.7mm	15.9mm	19mm	25.4mm
112	130	240	340	470	620	240	340	470	820
360	420	780	1100	1500	2000	780	1000	1500	2000

# Choosing the PERFECT tube for all of your applications

Watson-Marlow is the only peristaltic pump manufacturer in the world to manufacture its own tubing, optimising 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 offers tubing in eight materials and over 40 sizes, giving an extraordinary range of chemical and application capability.

**Marprene** is our high-performance general-purpose tube. This thermoplastic elastomer provides chemical compatibility, long pumping life and pressure handling. Marprene® is ideal for general-purpose pumping or food handling and is highly resistant to oxidising agents such as ozone, peroxides and sodium hypochlorite. Meets FDA requirements 21 CFR 177.2600 and USDA standards for food handling. Working temperature range 5C to 80C. Autoclavable.



**GORE High Resilience Tubing Style 400** is an expanded PTFE and Viton fluoroelastomer and enables the benefits of peristaltic pumps to be introduced to a wide range of applications for pumping concentrated acids like sulphuric and nitric acid, as well as aromatic hydrocarbons like toluene and xylene. Style 400 tubing offers tube life more than 50 times that of extruded Viton or Fluorel tube and can be used for pumping up to 4 bar. The elastomer used in this tubing is Viton GF-600S, a peroxide-cured fluoroelastomer based on DuPont's advanced polymer architecture.



## LoadSure™ elements



### Secure connection

LoadSure™ elements fit into position for simple, **error-free loading**: optimum performance every time. Using the patented LoadSure™ D-connectors, the element can be changed in under one minute: **simplicity itself, no special skills required.**

Watson-Marlow **LoadSure™** tubing elements for 520, 620 and 720 pumps **offer greater range reliability, easy installation and increased productivity.** They link to the rest of your system using secure instant connectors: industrial-standard Cam-and-Groove connectors for 620 and 720, far left; and quick-release push-fit connectors for 520 pumps, left. Both guarantee a secure seal and immediate release when required.

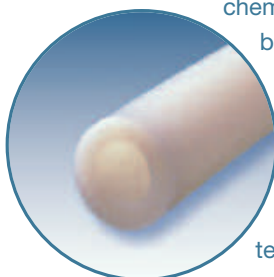
**GORE STA-PURE PCS®** has a unique composite construction of silicone in a ePTFE lattice giving it superior burst resistance up to 7 bar (100psi) and 18 times longer life than silicone tubing.

It produces virtually no spalling, is USP Class VI approved and is classified as non-toxic. Working temperature range -20C to 80C. Opaque white. Autoclavable, SIP and CIP compatible.



**GORE STA-PURE PFL®** is effectively pumpable PTFE – a high performance composite of ePTFE and a high-grade fluoroelastomer – offering extraordinary chemical resistance, long life and very high burst pressures.

STA-PURE PFL is USP Class VI and food grade approved, making it suitable for foods and pharmaceuticals as well as aggressive chemicals. Working temperature range -20C to 80C.



**Neoprene** offers excellent performance with abrasive slurries and sustained pressure applications. Good suction and pressure capabilities.

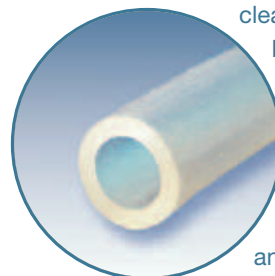
Working temperature range 0C to 80C. Black.



## Pumpsil platinum-cured silicone

tubing is manufactured by Watson-Marlow 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 21CFR177.2600 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.

## Bulk supply

### Pipework and accessories

A range of interface pipework is available for our LoadSure™ element pumps with industrial valved or non-valved connectors. Leak detection sensors are also available for most of our pump range.

### Make reel savings

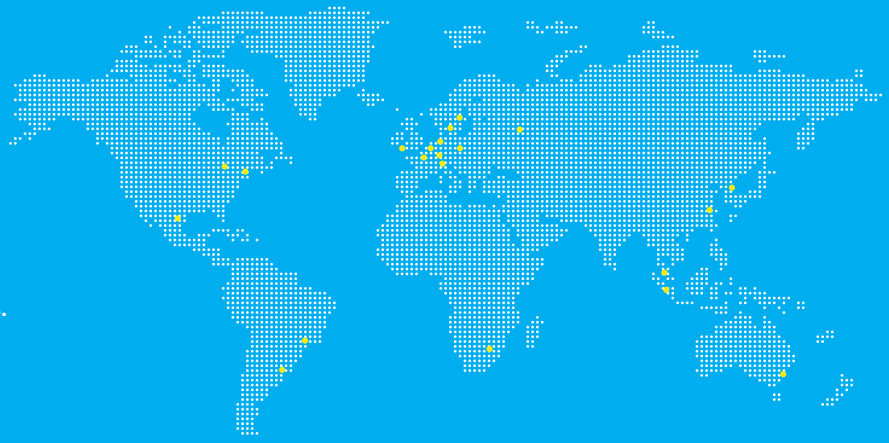
Many of our tubes are available in bulk, as well as in the standard shorter lengths – up to 152m at a time, depending on the bore size. Bulk buying gives important benefits in convenience, and huge cost savings: 36% less per metre than the metre price for 3m and 5m cut lengths. Further discounts are available on orders for multiple reels. Ask for our reel leaflet for the tube material of your choice.





Watson-Marlow Pumps Group has five world-class factories supported by direct sales operations in 20 countries and distributors in more than 50 countries. For contact details visit our website:

**www.wmpg.com**



**Watson-Marlow Bredel Alitea Flexicon MasoSine**



### Watson-Marlow online

Our engineers around the world can help you choose the perfect pump and tubing for your needs.

More information? Our brochures are on our website - [www.wmpg.com](http://www.wmpg.com)

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