

**Fluid path solutions
for industrial and
sanitary process**



Recognised expertise



Unparalleled experience

Watson-Marlow Fluid Technology Group is acknowledged as the world leader in niche positive displacement pumps and associated fluid path technologies

Our pumps are ideally suited to a wide variety of applications, from biotechnology and pharmaceutical processes that demand sterility and precision, to highly corrosive slurries typically seen in precious metal processing.

Watson-Marlow Fluid Technology Group now comprises ten distinct businesses and world-class manufacturing facilities.

Our vision

Delivering knowledge, service, and products of such excellence that users will seek Watson-Marlow Fluid Technology solutions at every opportunity.



The revolutionary Qdos chemical metering pump



More than one million pumps installed worldwide

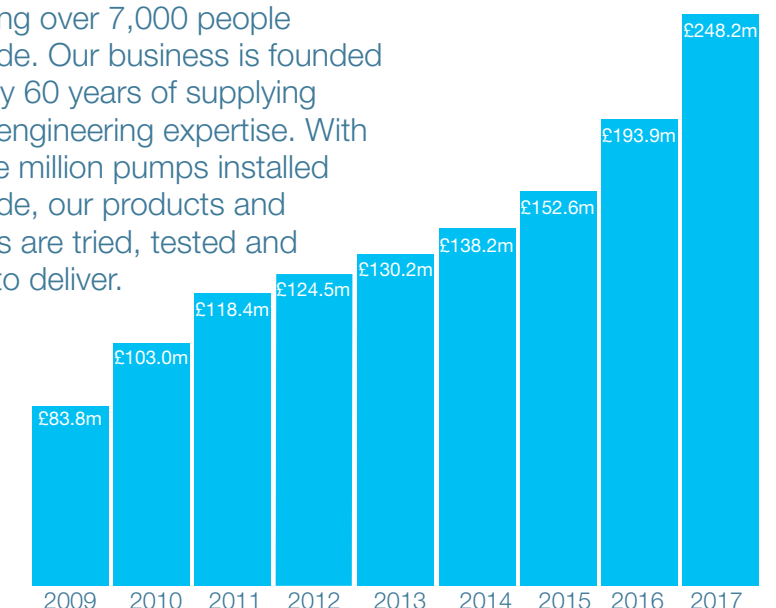
No other company shares our level of experience and knowledge to provide total process confidence and security

Watson-Marlow is committed to continuous investment in innovation, technology leadership and advanced manufacturing techniques.

We have grown significantly in recent years through selective acquisitions and strategic investment. This has strengthened our portfolio, expanded our addressable markets and increased our market share.

Watson-Marlow Fluid Technology Group is a wholly owned subsidiary of Spirax-Sarco Engineering plc (LSE: SPX), a global organisation employing over 7,000 people worldwide. Our business is founded on nearly 60 years of supplying trusted engineering expertise. With over one million pumps installed worldwide, our products and solutions are tried, tested and proven to deliver.

Watson-Marlow Fluid Technology Group; consistent year-on-year revenue growth over the last eight years



Our business



Our roots lie in positive displacement pumps and associated fluid path technologies. As the acknowledged leader in our field, Watson-Marlow products are the pumps of choice for applications requiring accuracy, sterility and reliability



Our positive displacement pumps and associated technologies ensure value for money; low cost of ownership; reliability and ease of maintenance, making them a cost-effective solution and a strong return on investment.

Watson-Marlow is also the only fluid path provider in the world to manufacture and supply its own precision tubing.

Watson-Marlow Tubing offers accurate, long-term performance. Our tubing complements our peristaltic pumps and enables our customers to deploy end-to-end solutions for their pumping requirements from a single reliable and innovative source.

**WATSON
MARLOW
Pumps**

peristaltic tube pumps

**WATSON
MARLOW
Tubing**

precision tubing

Alitea
OEM Pumps

peristaltic solutions for
OEM customers

Breidel
Hose Pumps

heavy-duty hose
pumps

Flexicon
Liquid Filling

aseptic filling and
capping systems

masosine
Process Pumps

sinusoidal pumps

**bio
PURE**

single-use fluid path
components

ASEPCO

Weirless Radial
diaphragm valves

Flow Smart

sanitary fluid path
products

AFLEX HOSE

PTFE lined flexible hose

Serving a host of industries

Where our one million pumps keep industry productive

Our products save time and money worldwide by successfully handling the toughest applications in a broad range of industries including:



Biotechnology and pharmaceutical

Biotechnology and pharmaceutical processes are among the most critical in the world. We are unique in being able to work with customers at every process step. We provide scalable technology and validated contact materials, helping to achieve compliance and repeatability throughout their processes.



Food and beverage

The low-shear design of our food pumps enables superior handling of flavours, additives and shear sensitive food ingredients such as soft fruit, cheese curd, fondants and dough. We reduce wastage and ensure high quality finished products.



Mining

Transferring slurries with high solid content and strong acidity creates problems for other pump types. Our range of heavy duty hose pumps and chemical metering pumps overcome these challenges and significantly increase reliability, to lower the total cost of ownership.



Water and wastewater

Combining high levels of volumetric accuracy with the ability to handle abrasive sludge or slurry is important for efficient water and wastewater treatment. Our hose pumps and chemical metering pumps are self-priming and dry running, with no moving parts in contact with the fluid.



Chemical

Delivering flow rates that remain constant up to 7 bar, peristaltic chemical metering pumps give users a unique advantage over traditional diaphragm pumps. Our pumps cut chemical costs through higher accuracy metering and eliminate ancillary equipment.



Paint and pigments

Paints and pigments are difficult to handle and can cause premature wear and pump failure. Watson-Marlow peristaltic pumps provide significant advantages through total product containment and they are virtually maintenance free.



Print and packaging

The low shear design of our positive displacement pumps ensure gentle handling of inks, coatings and adhesives to prevent foaming. Rapid changeover with no pump cleardown requirement cuts downtime between print runs.



Pulp and paper

High quality paper, coupled with lower production costs, is the formula for profitable paper making. Our pumps provide excellent resistance to viscous and abrasive chemicals in this harsh industrial environment, as well as the ability to handle high density pulp.



General Industry

Across industry, peristaltic pumps without valves, seals or glands are ensuring safe containment and low cost fluid transfer, helping thousands of companies achieve performance and cost improvements and a rapid return on their investment.



WATSON MARLOW Pumps

Peristaltic pumps have become the first choice of pump for high purity and industrial applications; ensuring customers' critical fluid transfer requirements are met

In bioprocessing, Watson-Marlow pumps reduce costs and minimise validation, while industrial pump users benefit from increased safety and low maintenance requirements.

Widely accepted as the world's fastest growing pump type, peristaltic pumps have no valves, seals or glands. Peristaltic pumps have a number of advantages over other pump types: they provide superior flow rate stability and metering accuracy and are inherently hygienic.



Flexicon *Liquid Filling*

Flexicon Liquid Filling equipment facilitates high accuracy aseptic filling and easy product changeover without cross-contamination or cleaning validation

Modular peristaltic liquid filling solutions which will grow with your business and are designed for small to medium sized batch filling duties requiring flexibility, high precision and efficiency.

Flexicon offers stand-alone units for hand filling, through semi-automatic systems, to fully automatic filling from 0.1ml to 100ml, as well as stoppering and capping machines.





MasoSine pumps typically require up to 50% less power than conventional pumps used in viscous fluid handling duties. Additionally, the sinusoidal rotor produces powerful suction with low shear, low pulsation and gentle handling; features vital to the food and beverage industry, where customers benefit from less waste and faster processing.

There are a number of key benefits associated with using Sine pump technology, particularly a reduction in energy consumption



Bredel

Hose Pumps

Bredel is the world's largest manufacturer of hose pumps and hose element materials. Our positive displacement pumps are working non-stop around the world

With operating pressures to 16 bar and flow rates to 108 m³/hr, our pumps save time and money by successfully handling the toughest applications.

Bredel hose pumps are the ideal pump for a vast range of industry applications, including chemical, ceramics, water and waste treatment, food and beverage, print and packaging. Our positive displacement pumps have no valves, seals or glands and the fluid contacts only the bore of the hose. They are simple to install and operate, and easy to maintain.





WATSON MARLOW Tubing

Watson-Marlow's tubing product range has been developed in-line with key market drivers such as validation, low leachable materials and security of supply

Successful bioprocessing relies on fluid handling without cross-contamination, guaranteed batch to batch consistency and compliance with stringent regulations. We are the only complete fluid path provider in the biotechnology and pharmaceutical markets to guarantee those needs.

In Watson-Marlow's state-of-the-art cleanrooms, the company manufactures Pumpsil premium quality platinum-cured (and post-cured) silicone tube, Bioprene, a unique thermoplastic elastomer (TPE) tube, and PureWeld XL designed to deliver purity and performance in single-use bioprocessing applications.

Alitea OEM Pumps

Zero contamination and virtually maintenance-free pumping are just two of the reasons Alitea OEM pumps are specified for medical devices and environmental analysers

Peristaltic pumps have clear advantages when handling fluids containing small particles such as those in endoscopy or dental surgery equipment. Compact in size, the pumps function as their own check valve so avoiding the need for further expense or system complication.

With over 300 drive speeds and voltages, 130 pumphead variants and 60 tubing sizes, we are confident we can offer medical and diagnostic equipment designers and manufacturers the best solution to their pumping needs.

All pumps have a long and predictable service life, with minimal downtime and spares inventory, providing the lowest whole life cost of any OEM pump type.



BioPure specialises in the design and production of advanced single-use tube and connector systems for biotechnology and pharmaceutical customers

BioPure are leaders in the development and manufacture of single-use fluid path components for use within the pharmaceutical and biotechnology markets.

We manufacture in ISO Class 7 cleanrooms, with components lot traceable from raw material to final product.

Drawing on considerable single-use expertise, BioPure provides the flexibility of customised fluid path solutions to suit a range of bioprocessing needs.

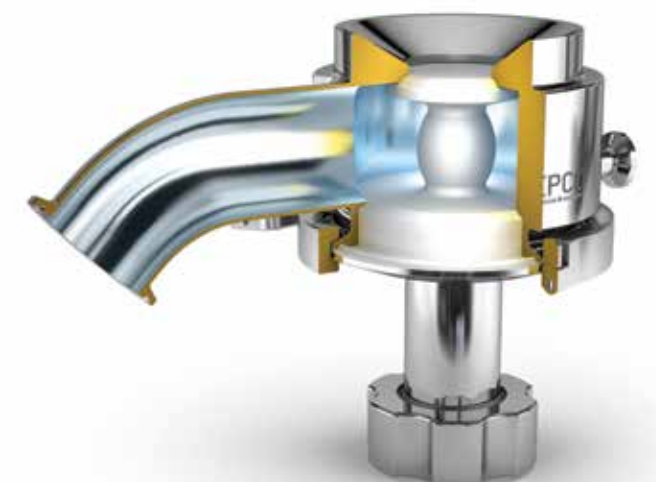
Validation for bioprocessing applications is now easier than ever before.



ASEPCO

ASEPCO valves are designed for use in the most demanding high-purity fluid streams in bioprocessing applications

ASEPCO's patented valve architecture includes a unique Weirless Radial diaphragm. To the thousands of ASEPCO customers this means no leakage or contamination of valuable products and, impressively, cost savings of up to 80% in maintenance are reported.





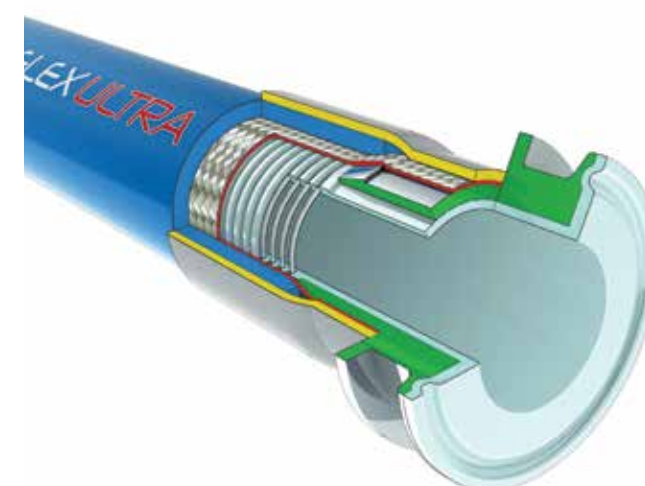
FlowSmart's product range utilises market-leading technology to improve sterility within bioprocessing, reducing validation risk in demanding contamination-free applications and providing improved process sterility

FlowSmart manufactures sanitary fluid path products, including high performance gaskets and braided and wire reinforced Platinum-cured silicone hoses. FlowSmart designed and chose each gasket compound, ranging from EPDM to Platinum-cured silicone and PTFE, for previously unrealised performance, and have more USP Class VI tested compounds than any other gasket company.



Afex is a natural extension to the Watson-Marlow fluid path product portfolio and further strengthens our strong global presence in the biotechnology, pharmaceutical, industrial, automotive, food and beverage sectors

Manufacturing the widest and most technically advanced range of PTFE-lined hose products, Afex are able to meet customers' specific needs in demanding process fluid transfer applications, ensuring the highest levels of chemical resistance and superior flexibility.



Product innovation



At Watson-Marlow, we have always been one step ahead of the competition.

Product innovation is the foundation of our growth strategy

Our smallest pump, operating at its lowest speed, would take nearly 13,000 years to pump what our largest pump, at its highest speed, can pump in just one minute.

Our strong connections with the market means we understand customers' needs, and we continuously research to identify new product opportunities.

Our current products aim to be best-in-class, and our new products are winning market share from other positive displacement pump types, such as diaphragm, lobe and progressive cavity.

We are committed to investing in technology to fully integrate our products and systems with customers' processes. This allows them to increase plant efficiency and reduce their maintenance costs.

Optimised performance

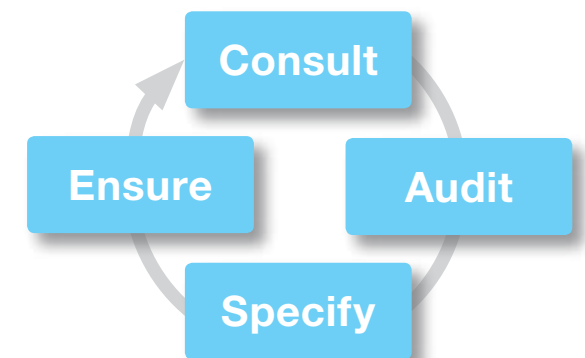


Our goal is to help our customers maximise their throughput and achieve cost reductions

As part of our commitment to continual improvement, our design teams encourage customer feedback throughout the product development process. This enables us to ensure we are designing products that meet our customers' needs, now and in the future.

Our approach concept, **CASE** (Consult, Audit, Specify and Ensure) means we work closely with our customers to identify the potential for even better product performance and then specify the exact solution to deliver that improvement.

- Minimising downtime
- Improving end-product quality
- Minimising wastage
- Implementing process efficiencies



Global presence – local expertise



Watson-Marlow Fluid Technology Group is a global business delivering local solutions

Watson-Marlow Fluid Technology Group is the world leader in niche peristaltic pumps and associated fluid path technologies for the food, biotechnology and pharmaceutical, chemical and environmental industries.

We have ten world class factories and direct sales operations in 33 countries around the globe. Experienced distributors provide additional local expertise in over 50 countries. This ensures our customers always benefit from local knowledge and sector expertise.

No matter where our customers operate, we are never far away

Customers demand many things from their process equipment and the prime concern is maintaining product integrity. Watson-Marlow Fluid Technology Group supplies products which meet a range of requirements including value for money, low cost of ownership, reliability, ease of maintenance, and proven after sales service.

There is also the issue of return on investment. We work closely with our customers to demonstrate how our positive displacement pumps ensure accurate metering, transfer and filling, and can deliver significant process efficiencies over the lifetime of the equipment.

We recognise that our people are equally important as our technology. Ongoing investment in training and development for all our staff lies at the core of Watson-Marlow's corporate philosophy.

Our people understand the importance of providing the highest standard of service to our customers, at every level. We work with them to develop their understanding of our customers, their applications and the pressures that affect their businesses.

Safeguarding our environment

We continually work to improve our environmental performance in the design, development and manufacture of our products



At every level, our team is committed to helping customers

- increase productivity
- improve their processes
- deliver cost reductions

Sustainability is the framework by which we responsibly manage environmental, social and economic risks and opportunities for long-term value creation.

We will provide products and services that improve efficiency and productivity and reduce energy, water and waste.

By helping to improve the sustainability of our customers' operations, we will build strong, long-term relationships, maintain our competitive edge and develop opportunities for growth.

The sustainability goals we have set will be embedded into all new product development.

Our technical expertise and knowledge regarding the application of our products is a key factor in maximising the production and process benefits that can be achieved; all of which have a significant and positive effect on the environment.



Fluid Technology Group

INNOVATION IN FULL FLOW



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



Disclaimer: The information contained in this document is believed to be correct but Watson-Marlow Limited accepts no liability for any errors it contains and reserves the right to alter specifications without notice. It is the users' responsibility to ensure product suitability for use within their application. Watson-Marlow, LoadSure, Qdos, ReNu, LaserTraceability, Pumpsil, PureWeld XL, Bioprene, Marprene, Accusil, asepticu and puresu are registered trademarks of Watson-Marlow Limited. Bio Y, BioClamp, BioBarb, FlatBioEndCap, BioEndCap, BioValve and BioTube applicator are trademarks of BioPure Technology Limited. Tri-Clamp is a registered trademark of Alfa Laval Corporate AB. GORE and STA-PURE are trademarks of W.L. Gore and Associates.

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Reduce risk

with **fluid path solutions** from
Watson-Marlow Fluid Technology Group



Market specific solutions for biotechnology and pharmaceutical applications

Watson-Marlow Fluid Technology Group delivers total connectivity along your fluid path. Whether in single-use or stainless process, our range of Watson-Marlow peristaltic pumps, ASEPco valves, FlowSmart gaskets, BioPure single-use fluid path components, Aflex PTFE hoses, and Flexicon aseptic fill/finish systems all work together to reduce risk while optimising the repeatability of your process. All products offer traceability through LOT numbers or serial numbers.

**WATSON
MARLOW
Pumps**

Watson-Marlow peristaltic pumps and OEM solutions provide total process confidence and security, and scale from the benchtop to full production. Watson-Marlow's extensive product portfolio offers superior flow stability and metering accuracy ensuring process stability, GMP compliance and the highest final product quality.

www.wmftg.com/watson-marlow



Quantum

A step change in single-use bioprocessing capabilities, providing flow linearity to 20 L/min at 3 bar, with 0.12 bar pulsation and low shear.

Quantum is the first pump to provide integrated 4000:1 control ratio and validation in-line with BPOG/BPSA/USP/ISO guidelines.



100 series

Flow rates up to 190 ml/min. Single, twin or three channels of flow. Manual, remote or auto control.



200 series

Flow rates from 6 µl/min to 22 ml/min. Cassettes accept standard manifold tubing. Up to 32 channels of flow.



300 series

Flow rates from 2 µl/min to 2000 ml/min. Flip-top pumphead for easy tube loading. Single or multi-channel pumpheads.



500 series

Flow rates from 0.4 µl/min to 3.5 L/min. Four drive and five pumphead options. Up to 7 bar pressure.



600 series

Flow rates from 0.001 ml/min to 18 L/min. Up to 4 bar pressure. 2650:1 control ratio.



700 series

Flow rates from 0.12 L/min to 55 L/min. Up to 2 bar pressure. Single or twin channels of flow.



800 series

Flow rates to 8000 litre/hr. 3.5 bar pressure. Clean-in-place (CIP) and steam-in-place (SIP).



114DV panel mount pump

Flow rates up to 340 ml/min. 5 bar pressure. Available with a number of drive options or as pumphead only.



313D panel mount pump

Flow rates up to 2000 ml/min. 2 bar pressure. Available with a number of drive options or as pumphead only.



Bench top fillers and cappers

Stand-alone units for manual aseptic filling and capping.



Semi-automatic systems

Semi-automatic highly flexible filling systems. Ideal for small batch production.



Automatic filling and capping

For clinical trial or contract filling. For bottles with screw caps or vials with crimp caps.



OEM filling units

Peristaltic solutions for high capacity filling machines. Replacements for piston fillers.



asepticu® single-use assemblies

Single-use fluid paths for Flexicon fillers. Rapid product change-over.



Accusil® tubing and filling nozzles

Platinum-cured silicone tubing for accurate filling.



Weirless Radial diaphragm in-line valve family

Our family of Weirless Radial in-line valves are designed for a host of applications. In addition to the standard in-line valve, our sterile access valve and block-and-bleed valves are designed to eliminate the need for additional equipment and reduce cleaning and contamination risk. Our simple Tri-Clamp assembly allows for 80% faster maintenance.



Weirless Radial diaphragm tank bottom valve family

ASEPCO tank valves are also built around our patented radial diaphragm, and benefit from a simple Tri-Clamp assembly for faster maintenance. Tank valves can be welded truly flush to the bottom of your tank with no need for gaskets, bolts or seams. With our flexible design and manufacturing approach, we can customise valves to suit your needs.



Weirless Radial diaphragm sample valve

Our hydrodynamic design gives you clean, consistent sampling every time and allows for enhanced temperature control and sample system cleanability. The behind-the-seat flow path allows for easy CIP/SIP between samples. The design of the sample valve allows for closer jacketing to the tank with the fittings angled away from the vessel at a quicker rate.



BioPure produces a range of innovative bioprocessing fluid path components that simplify production operations, lower cGMP manufacturing costs and reduce process validation. All BioPure products are supported by class-leading validation guides detailing test protocols including ISO, USP and extractables, enabling customers to quickly assess suitability for their manufacturing process.

www.wmftg.com/biopure



Q-Clamp™ sanitary Tri-Clamp™

Single-handed tool free operation. Unique tamper evident identification technology. Pressure rated up to 7 bar.



Platinum-cured silicone gaskets

Precision engineered to achieve a smooth bore, contamination free fluid path. Cleanroom manufactured and packed. Flanged and unflanged options.



Platinum-cured silicone braided hose

High pressure flexible hose, single and double braided options. Cleanroom manufactured and packed.



Single-use fluid path components

Tri-Clamps, flow control valves, end caps and connectors. Cleanroom manufactured and packed.



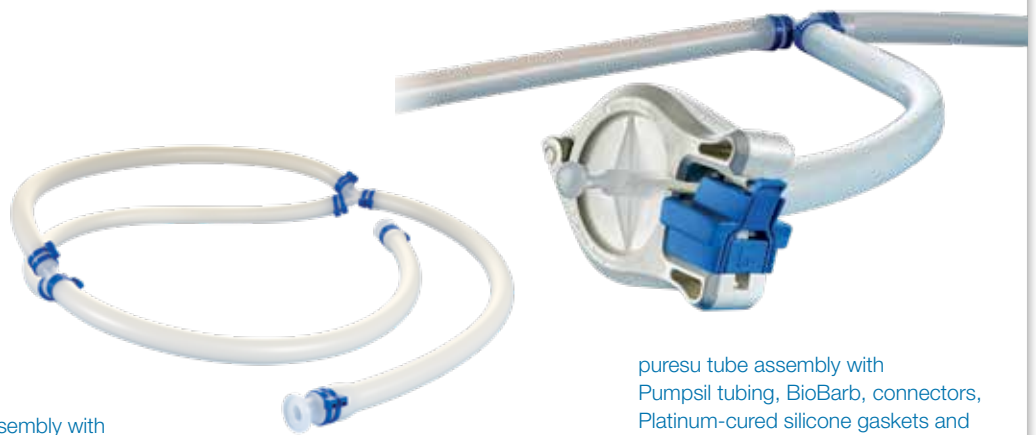
BioTube Applicator

Allows automation of tube to hose barb assembly. Increases quality and reduces risk of junction failure.

puresu® single-use fluid paths

Single-use fluid path assemblies that are cleanroom manufactured and packed. Offering a broad range of validated components and configurations, with no minimum order quantity and simple, repeatable ordering to support a continuous supply chain.

Work with us to design you a perfect customised fluid path solution for your application.



puresu tube assembly with PureWeld XL tubing, BioBarbs and Bio Y

puresu tube assembly with Pumpsil tubing, BioBarb, connectors, Platinum-cured silicone gaskets and Q-Clamp sanitary Tri-Clamp



FlowSmart design and manufacture fluid path components which guarantee product consistency and process security. FlowSmart gasket technology improves sterility within production processes, reducing validation risks for contamination-free applications.

www.wmftg.com/flowsmart

PolyClamp EPDM sanitary gaskets

SIP compatible with geometric stability after repeat cycles. USP Class VI validated. Flanged and unflanged options.

PolyClamp EPDM gaskets are the perfect solution for connecting ASEPCO Weirless Radial diaphragm valves in your process.



WATSON MARLOW Tubing

Watson-Marlow's range of high purity platinum-cured silicone, weldable and long life thermoplastic elastomer tubing is designed specifically for applications throughout biotechnology and pharmaceutical processes. Matching Watson-Marlow tubing with our peristaltic pumps enables customers to build easy-to-validate, end-to-end fluid path solutions from a single, reliable source.

www.wmftg.com/tubing



Pumpsil®

Platinum-cured silicone with absolute traceability. Single-use tubing for biotechnology and pharmaceutical applications.



PureWeld XL®

Providing secure, cost effective pumping and transfer. Weldable, with low particulate generation.



Bioprene®

Thermoplastic elastomer tubing ideal for higher pressure applications with excellent chemical resistance.



GORE STA-PURE Series PCS

PTFE-reinforced silicone tubing with very low particulate generation. Delivers long term performance and repeatable accuracy.



GORE STA-PURE Series PFL

PTFE-reinforced fluoroelastomer tubing handles nearly all aggressive chemicals including organic solvents.



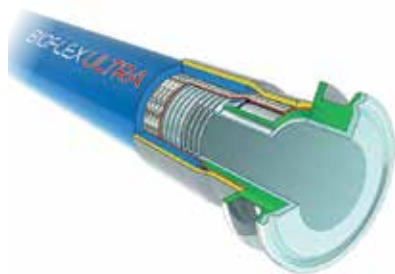
Sanitary LoadSure® Fluid Path Kit

LoadSure elements now include pre-validated BioPure Q-Clamps, and appropriate gaskets from a single source.



Aflex hose manufacture the widest, most technically advanced range of PTFE lined flexible hose products. Performance features include excellent chemical resistance, a smooth bore that ensures a clean fast fluid flow, resistance to high pressures and vacuum resistant and unmatched flexibility and kink resistance.

www.wmftg.com/aflex



Bioflex Ultra

Design for process fluid transfer, Bioflex Ultra smooth bore hose has a patented liner that offers unmatched flexibility and kink resistance. Bioflex Ultra provides a clean, fast flow of high purity fluids. Bores available up to 3 inch (80mm) bore with a range of PTFE lined and non lined end fittings and design options.



Pharmaline N&X

Pharmaline N&X hose is designed to replace conventional silicone rubber hose for process fluid transfer. Pharmaline offers improved autoclave life cycle performance, chemical resistance and internal cleanliness. Bores are available up to 3 inch (80mm) bore (Pharmaline N only) with a range of non lined end fittings and design options.



Watson-Marlow Fluid Technology Group

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