

FLOWROX

Proven Performance

Flowrox Peristaltic Hose Pumps



Flowrox Peristaltic Hose Pumps for Transferring, Dosing and Metering

The innovative Flowrox peristaltic hose pumps set the industry standard for peristaltic pump technology. Designed for heavy industrial duties, they are ideal for pumping diverse slurries and dosing a wide range of abrasive, corrosive, viscous or crystallizing media.

THE OPERATING PRINCIPLE OF A PERISTALTIC PUMP

The operating principle of the Flowrox hose pumps is based on the peristaltic effect. As the cylindrical rotor rotates along the hose, the process medium gets pushed forward through the hose. At the same time, the hose behind the compression point reverts to its original circular shape creating a suction effect at the pump inlet port. As a result, the hose bore gets filled with the medium. No backward flow can occur as the hose is squeezed tight by the roller.



The world's largest hose pump, maximum continuous flow being 100m³/h.

ADDITIONAL FEATURES

Incorporating an advanced design, the Flowrox hose pumps can offer unbeatable additional features including:

- 360 degree operating cycle
- Only one compression per revolution
- Rolling hose contact
- In-line pipe connection
- Reliable hose connection
- Low lubrication need, only 20% of conventional peristaltic pumps' need

TECHNICAL FEATURES

Equipped with standard technical features of a typical peristaltic pump such as dry run capability and self priming, the Flowrox hose pumps provide exact flow per revolution. As Flowrox pumps are seal less, they will not get damaged even if they run dry for longer periods of time.

Standard technical features include:

- Only the hose is in contact with the medium
- No gland water or packing
- Full vacuum capability
- No backward flow
- Positive displacement

Resulting in process benefits such as:

- No wear and corrosion
- Dry run capability
- Selfpriming up to 9,5 metres
- Exact flow per revolution irrespective of the pipeline pressure
- Accurate flow
- No mixing or shearing of the medium

PROCESS BENEFITS

Flowrox hose pumps incorporate an advanced design, which eliminates friction, maximizes hose life time and lowers energy consumption.

Other remarkable process benefits are:

- Extended hose lifetime
- High pressure capability
- No overheating at high continuous flow rate 24/7
- Higher flow with smaller pump
- Low energy consumption
- Easy maintenance
- Low operating costs

Flowrox hose pump is the number one pump for hot temperatures, as it can **run continuously even in 98°C degrees.**



Flowrox pumps offer:

- Superior rolling technology
- Energy efficiency
- Long service intervals
- Low life cycle costs



LPP-T Pumps for Transfer Duties

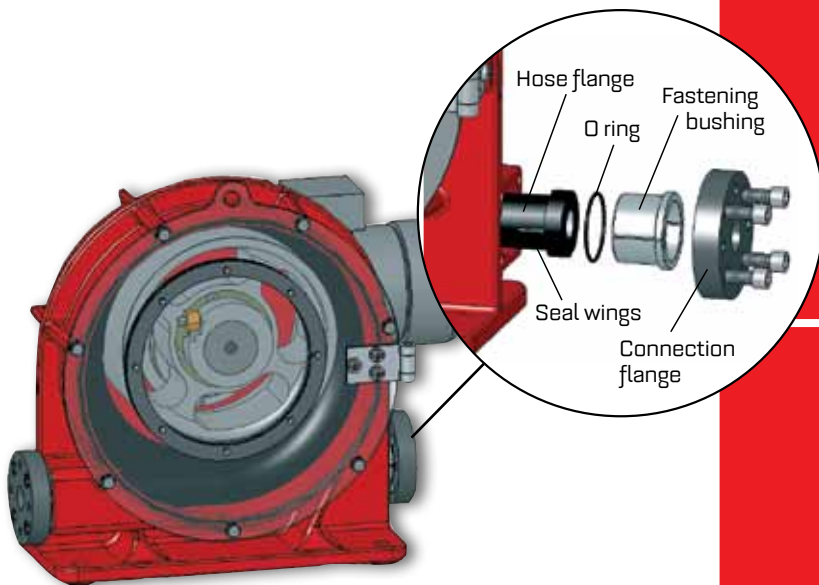
LPP-T pumps provide substantial savings through improved process performance and efficiency, long service intervals and low maintenance costs. They are manufactured using durable elastomers and advanced materials making them perfect for pumping a wide range of media.

PATENTED ECCENTRIC HOSE ADJUSTMENT

Flowrox LPP-T pumps are equipped with patented, reliable hose flange and in-line pipe connections; a hose leak detection unit and a patented adjustment mechanism that senses hose wear when compression is readjusted. This helps to maximize hose lifetime and minimize the risk of over-compression. There is no need for shimming.

WITH FLOWROX PUMPS THE TOTAL LIFE TIME COSTS ARE REDUCED

Energy efficiency, long hose life and low maintenance need lead to substantial savings during the life cycle of peristaltic pumps. Flowrox pump's hose life time is more than 4 times longer than with a conventional pump.



CONVENTIONAL DN65 HOSE PUMP
 designed flow rate 10 m³/h
 pump will run: 10 000 l/h
 -----> 25 RPM
 Estimated hose life time
 518 400 cycles.
 -----> **346 hours.**

FLOWROX LPP-T65
 designed flow rate 10 m³/h
 pump will run: 10 000 l/h
 -----> 31 RPM
 Flowrox estimated hose life time
 2 700 000 cycles.
 -----> **1452 hours.**

LPP-T Pumps in Mining & Minerals Industry

Products: 12 x LPP-T 65 pumps
Application: Washing liquid circulation pump

Talvivaara open-pit mine has used Flowrox LPP-T 65 pumps since 2008 (5 pcs) and 2009 (7 pcs). The pumps work with Outotec Larox rubber belt filters RB-SV in order to recycle water from filter cloth and rubber belt washings to cake washing. This saves water and all valuable minerals coming out of the cloth and rubber belt can be fed again to the cake.

Flowrox hose pumps are ideal in these kinds of filter applications, as the washing water typically has very high content of solids. This was one of the main reasons why the customer chose Flowrox hose



Washing liquid circulation pumps in Talvivaara mine.

pumps for this application. Flowrox pumps also suit extremely well for viscous, crystallizable, corrosive or abrasive media.

- Flowrox pumps used in Talvivaara:
- 6 pumps in gypsum precipitate filters
 - 2 pumps in nickel-cobalt sulphide filters
 - 2 pumps in zinc sulphide filters
 - 2 pumps in copper sulphide filters

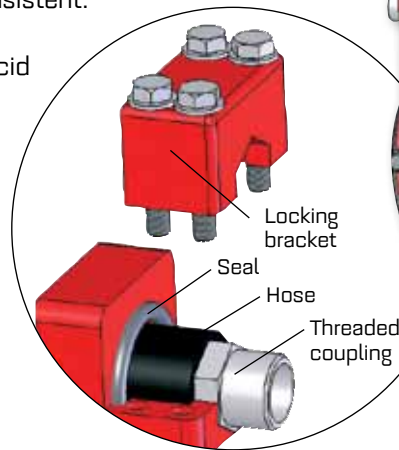
LPP-D Pumps for Dosing Duties

THE TRAILBLAZING LPP-D DOSING PUMPS

Flowrox LPP-D dosing pumps have a high turndown ratio making them ideal for dosing and flow control. They provide accurate dosing in all process conditions as the pump discharge flow does not depend on the pipeline pressure.

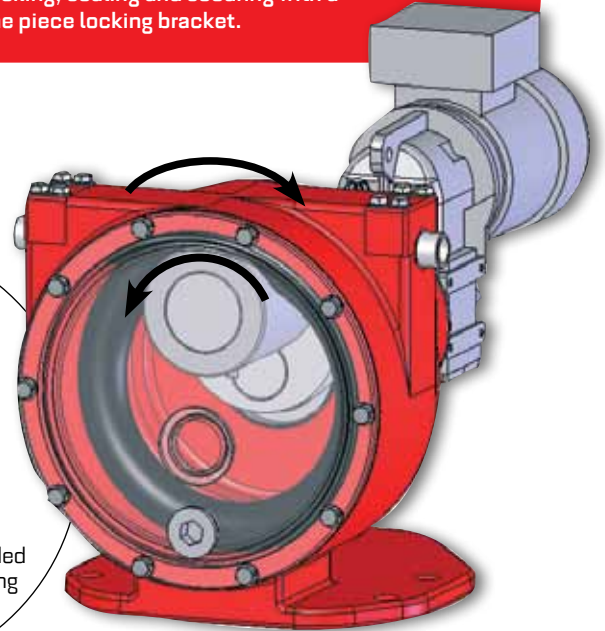
Operators do not have to worry about overheating even with high continuous flow rates. The pump operation is trouble-free and consistent.

16 bar high pressure as well as acid proof pump heads are also available.



The advanced design

- A simple and reliable hose connection.
- Locking, sealing and securing with a one piece locking bracket.



LPP-D Pumps in Construction Industry

Products: 8 x LPP-D25 pumps
23 x LPP-D20 pumps
5 x LPP-D15 pumps

Medium: Paint Oil Based and Paint Pigments + Coater

Since changing to the Flowrox Pumps James Hardie Building Products, the market leader in Fiber Cement Technology in the USA, has been able to remarkably reduce downtime. Controlled by a variable frequency drive (VFD) the LPP-D pumps have also significantly increased flow accuracy.

James Hardie replaced air operated diaphragm pumps with a first LPP-D20 pump for dosing of paint primer in 2007. By now they have totally 36 LPP-D pumps in each of their 6 locations.

According to the engineering manager at James Hardie the air operated diaphragm pumps were failing every three weeks, and a decision was made to find a more reliable pump.

The benefits they achieved with Flowrox pumps are:

- Reduced downtime
- Increased flow accuracy



Already 36 LPP-D pumps increase accuracy in dosing duties at James Hardie.

- Reduced maintenance labor costs
- Reduced spare parts costs as the LPP-D hose is significantly less cost than diaphragm pump parts replacement
- Reduced cost due to high air consumption of diaphragm pumps and costs of generating this air
- Rolling hose compression of the LPP-D offers a more reliable uninterrupted flow of the medium to the process compared to diaphragm pumps

The customer is very pleased with the ease of use and maintenance as well as low operating costs of the pumps. They have utilized hose or peristaltic pumps also in the past but have never been able to achieve the same level of reliability and reduced costs as now with the Flowrox pumps.

LPP-M Pumps for Metering Duties

SUPERIOR ACCURACY FOR YOUR PROCESSES



Accuracy of metering in any application is the most vital property of a metering pump. Flow rate of LPP-M metering pump is not affected by variation of the discharge pressure condition. Positive displacement of the tube bore with zero slip

provides same output volume on every cycle. The compression point of the tube acts as self-cleaning check valve without clogging risk providing clear flow path with no possibility for vapour lock.

Flowrox LPP-M pump has a protection rating of NEMA 4X/IP66 and is equipped with a unique Tube Failure Detection, which is designed to stop the pump if pump tube is ruptured and chemical enters the pump head.

The non-enclosed version of the pump is designed especially for OEM purposes.

A MULTITUDE OF PROGRAMS

LPP-M pumps have wider programmability and controllability than any other comparable pumps. They offer excellent connectivity to all possible customer environments. Inputs can include for example:

- Manual adjustment
- 4 to 20 mA
- 0 to 10 volts DC
- Frequency input (Hz)
- Remote start / Stop contact closure
- Flow verification system (FVS) input
- Contact closure input

Control modes make a diversity of dosing functions possible including

- Pulse batch
- Manual cycle adjust
- Dispensing
- Manual dosing
- Proportional dosing

Available display languages are English, German, Spanish and French.

PVDF adapter fittings allow easy tube changes.



LPP-M Pumps in Waste Water Treatment

Products: 4 x LPP-M pumps+ 2 LPP-D pumps

Medium: Sodium Bisulfite and Sodium Hypochlorite

Nashua New Hampshire is one of many United States cities and municipalities selecting Flowrox technology over inferior pumping technologies.

"Flowrox pumps offer stable flow and metering capabilities under varying operating conditions, and their energy requirement is constant", says the customer. "They can also handle severe variation in suction line condition in regard to suction lift and viscosity, and they are also very user friendly", he continues.

Flowrox engineered peristaltic pumps combine smart intelligence with superior turndown. Another remarkable advantage is that peristaltic pumps will not

experience vacuum degassing in summer months like other designs.

Flowrox was selected for equipment supplier based on the superior tube pump and control technology of the LPP-M tube pumps. The engineering consultant, the city of Nashua New Hampshire elected officials and contractor all formed a common consensus to order and approve the use of Flowrox pumps. Flowrox won on the technical merits, commercial merits and long-term operational advantages.

These pumps are operating flawlessly without any downtime since March 2008.



LPP-M pumping sodium hypochlorite 12.5% at Nashua New Hampshire.

Optimal Hoses and Tubes for Each Media

With decades of experience in developing innovative flow control solutions and elastomer technology, Flowrox has a wide selection of superior elastomers for diverse media and process conditions. The correct mechanical hose design and material selection are essential for optimal hose lifetime.

HOSES FOR LPP-T AND LPP-D PUMPS

The high-grade hose materials include chemical resistant ethylene propylene (EPDM), oil and fat resistant nitrile rubber (NBR), which is available also for food grade mediums (NBRF) and extremely abrasive natural rubber (NR), which is ideal for heavy wearing applications. To guarantee the best possible mechanical characteristics, the hose cover is always made of natural rubber.

NR

- Natural rubber
- Medium: extremely abrasive

EPDM

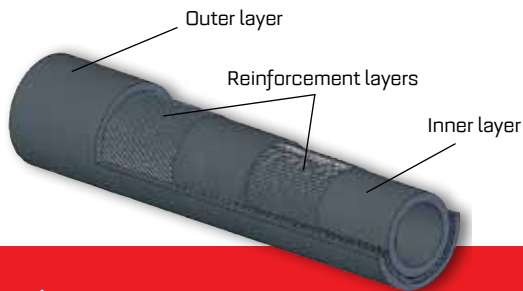
- Ethylene propylene
- Medium: chemicals

NBR

- Nitrile rubber
- Medium: oil and fat

NBRF

- Nitrile rubber
- Medium: fatty foodstuffs
- Fulfills FDA requirements



LPP-D hose construction.



The preformed LPP-T hoses ensure secure, trouble free and fast assembly.

TUBES FOR LPP-M PUMPS

Norprene®

Norprene® tubing has excellent alkali resistance and is compatible with numerous oxidizing agents such as hydrogen peroxide, sodium hypochlorite and ozone. Norprene® tubing fully complies with FDA, 3A Sanitary Standards, and NSF Standards, which are applicable to many food contact applications.

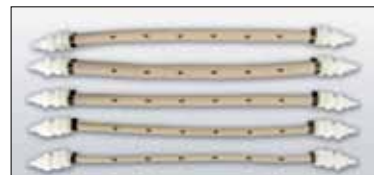
Norprene® tubing exhibits excellent resistance to ozone and UV light, with little or no signs of deterioration in laboratory testing equivalent to 10 years of outdoor exposure. Norprene® tubing provides long service life time when exposed to heat, abrasion, and pressure.

Tygothane®

Made of a tough, ester-based polyurethane, Tygothane® tubing's clarity, high tear strength and excellent abrasion resistance makes it ideal for many applications, including fuel and lubricant lines and abrasive product transfer.

It also offers exceptional resistance to oils, greases, fuels and many chemicals.

Able to withstand rugged daily use, Tygothane® tubing resists weathering. It meets FDA criteria for food and beverage use.



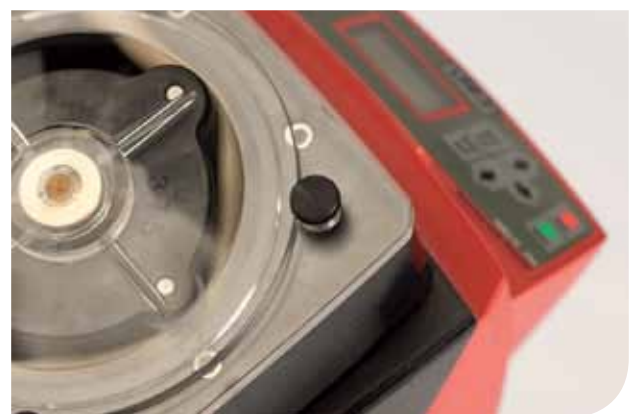
LPP-M tube materials: Norprene® and Tygothane®.

Technical Data of Flowrox LPP Pumps

Technical Data	LPP-T25	LPP-T32	LPP-T40	LPP-T50	LPP-T65	LPP-T80	LPP-T100
Weight	~ 130 kg	~ 300 kg	~ 360 kg	~ 650 kg	~ 960 kg	~ 2450 kg	~ 5300 kg
Flow/revolution	0.28 l	0.65 l	1.25 l	2.75 l	5.4 l	11.6 l	31,6 l
Maximum flow	2.2 m ³ /h	3.9 m ³ /h	7.5 m ³ /h	11.5 m ³ /h	20 m ³ /h	40 m ³ /h	100 m ³ /h
Maximum pressure	10 bar	10 bar	10 bar	10 bar	10 bar	7.5 bar	10 bar
Lubricant volume	0.8 l	0.8 l	1 l	2.5 l	3 l	8 l	25 l
Hose bore and flange connection	25 mm	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm
Motor power	0.75–1.5 kW	0.75–4 kW	1.1–4.0 kW	1.5–9.2 kW	3.0–11.0 kW	9.2–22.0 kW	55–90 kW

Technical Data	LPP-D10	LPP-D15	LPP-D20	LPP-D25
Weight	47 kg	47 kg	47 kg	60 kg
Flow/revolution	0.06 l	0.1 l	0.18 l	0.3 l
Maximum flow	0.4 m ³ /h	0.6 m ³ /h	1.2 m ³ /h	2.0 m ³ /h
Maximum pressure	7.5/16 bar	7.5/16 bar	7.5/16 bar	7.5/16 bar
Lubricant volume	0.4 /1 l	0.4/1 l	0.4/1 l	0.4/1 l
Hose bore and flange connection	10 mm	15 mm	20 mm	25 mm
Motor power	0.55–1.1 kW	0.55–1.1 kW	0.55–1.1 kW	0.75–1.5 kW

Technical Data	LPP-M
Weight/Shipping weight	12.4 kg/13.5 kg
Maximum flow	126 l/h
Maximum working pressure	8.6 bar
Max fluid temperature	54°C
Enclosure	IP66
Plug type	240V AC, CEE 7/VII [Europe]



More technical information available in datasheets.

All stages of the LPP-T and LPP-D pumps and their hose design and manufacturing are covered by ISO 9001:2000. They are also ATEX approved.



FLOWROX

Proven Performance

Proven Performance with Flowrox

Our customers work in some of the most challenging conditions on the planet. They run extremely abrasive or corrosive processes, often in remote locations. Whether they do business in mining, metallurgy, energy, cement, pulp & paper, chemical or other heavy duty industries, we are there for them.

And we are glad to help.

Flowrox is a privately held family owned company with over 30 years of experience and more than 100 000 global deliveries. We value long partnerships with our customers, and are inspired by their success. Our products increase our customers' productivity and offer the lowest total costs of ownership. Flowrox is the benchmark in heavy duty valves and pumps.

Experience with Insight • Participating Partner • Facilitating Performance



Contact our nearest office or one of our partners we have all over the world.

www.flowrox.com

