

FLOWROX

Proven Performance

PUMPS | flowrox.com

W

Pumping Solutions



Peristaltic Pumps
Progressive Cavity Pumps
Smart Features
Spares & Services
Complementary Products

Pump Solutions

We Exist to Make Your Life Easier

We deliver advanced pumping solutions for the most demanding process conditions. Our story has started over 40 years ago making us industry experts on flow control. During the years we have delivered over 150 000 products worldwide. Our unique pump design saves energy and water increasing your process availability and reducing total cost of ownership.

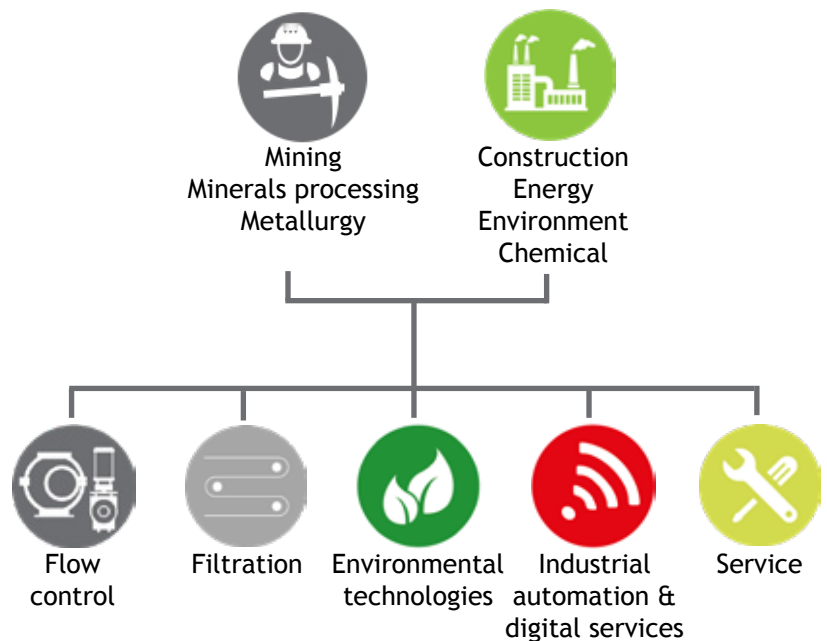
Product portfolio

- 1977 • Pinch valves
- 2002 • Hose pumps
- 2008 • Pump service, metering pumps



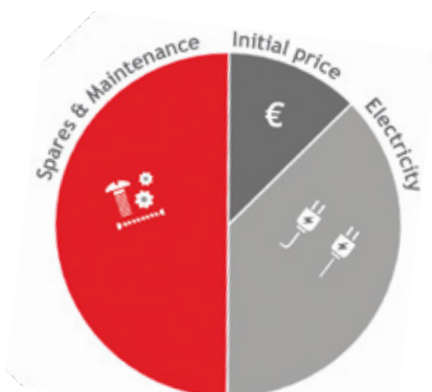
- 2011 • Progressive cavity pumps
- 2015 • Pulsation dampeners
- 2016 • Digital Services
- 2017 • Filter service, packaged pumping systems
- 2018 • Mobile geotextile dewatering unit, ceramic disc filters, filter presses, Smart Filtration Digital Service
- 2019 • Industrial automation, plasma technology for water purification, smart filter presses, centrifugal pumps

Focus Industries

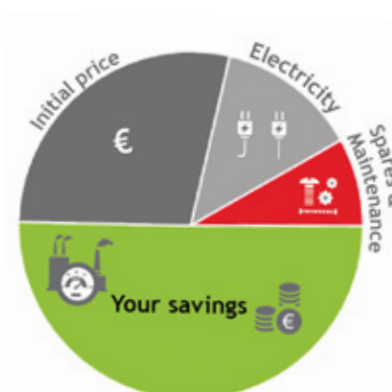


We Provide the Optimal Solution:

Centrifugal Pump



Flowrox Solution



Flowrox LPP-T pump compared to a centrifugal slurry pump, when 65 tons of solids per hour are pumped continuously.

YOUR BENEFITS

- Low Total Cost of Ownership
- Improved process performance
- Low operating costs
- Long service intervals
- Minimized downtime
- Heavy duty design

Flowrox Pump Product Portfolio

> Peristaltic Hose Pumps

LPP-T for Transferring

- Volume: 0.5-100 m³/h
- Pressure up to 10 bar
- Solids up to 80 %
- Temperature up to 95 °C
- Particle size 25 % from DN size
- Suction lift capability 0-8 m



LPP-D for Dosing

- Volume: 0,1 -2 m³/h
- Pressure up to 16 bar
- Solids up to 80 %
- Temperature up to 95 °C
- Particle size 25 % from DN size
- Suction lift capability 0-8 m



FXM for Metering

- Volume: 0-0,84 m³/h
- Pressure up to 8,6 bar
- Temperature up to 46 °C
- Liquid chemical metering
- Suction lift capability 0-9 m



> Progressive Cavity Pumps

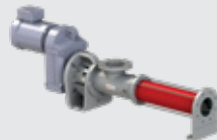
E-Series

- Volume: 0-228 m³/h
- Pressure up to 10 bar
- Temperature up to 70 °C
- For homogenous medias
- For flooded suction duties
- E.g. paste pumping



EL-Series

- Volume: 0-188 m³/h
- Pressure up to 6 bar
- Temperature up to 70 °C
- For homogenous medias
- For flooded suction duties
- E.g. Municipal waste pumping



D-Series

- Volume: 0-0,75 m³/h
- Pressure up to 12 bar
- Temperature up to 70 °C
- For chemical dosing
- For flooded suction duties
- For dosing chemicals and flocculants



> Digital Services



Smart LPP Pumps for Optimal Slurry Transfer

- Process data collection through various sensors
- Can also be retrofitted to any pump type or brand
- Enables advanced reporting and data analytics, making your process more reliable and transparent
- Increased productivity through optimization & online predictability

> Pump Services



Comprehensive Pump Installation, Maintenance and Spare Parts Services

- Site survey services
- Spare parts and component services
- Replacement products and components for original & compatible products
- Installation, commissioning, maintenance and repair services
- Product update and retrofit service
- Analysis services / commissioning / training

Reliable Flowrox Pumps Paired with Automated Flexible Filtration

Customer: Aquachem GmbH

End customer: CURRENTA GmbH & Co. OHG (Chemical plant, CHEMPARK, Germany)

Project name: Isolation of solids from waste water generated by flue-gas scrubbing

Process application: Feeding eight fully automatic filter presses for flue-gas scrubbing process

Flowrox products / solutions:

LPP-T65 peristaltic hose pumps x 8

Flexible Production Through Automation

CHEMPARK is a large area and CURRENTA provides services to various operations and its different demanding applications. Filters and pumps need to adapt fast to changing process conditions.

“Slurry in the filtration plant varies as we have numerous types of waste from multiple producers. Applications vary from diffused lithium batteries to pharmaceutical waste. Filtration plant needs to adapt to continuous process changes receiving non-homogeneous feed from flue-gas scrubbing yet offer 100 % reliable and safe operation. It is a demanding application as the filtrate needs to be clean enough to be released back into the process or the river Rhine,” explains Michael Schulte, Technical Foreman of incineration plants at CHEMPARK Leverkusen, CURRENTA.

“Application is very abrasive and requires high performance and resilience from the process equipment. As in any startup, we have faced some challenges. However, on rare occasions when a pump has failed, we have always received excellent and immediate support from Flowrox,” adds James Babbé, the CEO & Founder of Aquachem GmbH.

Aquachem is focused on developing and designing fully automatic filter presses used in this application.

Matching Process Requirements with Flowrox Process Equipment

“We have been using Flowrox pumps since 2009. They insure steady and reliable feed, which is essential for our unique fully automatic filter solutions. If the pump does not work, filtration equipment does not run either. Pump is the heart of the movement,” Babbé explains. Flowrox LPP-T hose pumps allow continuous monitoring and are easy to incorporate into any control system.

“We are familiar with superior performance of Flowrox pumps. In 2008 we have built a new tank farm for fluid waste treatment. We needed reliable pumps for challenging application which could handle extreme duty cycles. We first looked for joint membrane pumps which fit our requirements to pump 35 m³/h. However, we ended up ordering Flowrox LPP-T transfer pumps and they have performed to our expectations,” Schulte explains.

Professional and Localized Customer Service

“I could recommend Flowrox pumps for any filter feed applications. At Aquachem we are impressed by professionalism of the company. Beyond product benefits and technical features that are superior to its competitors, I also appreciate the openness when working with Flowrox. They provide an outstanding representative network, localized customer service and utmost professionalism in everything that is being done,” Babbé complements.



OUR CUSTOMER: Aquachem GmbH

James Babbé founded Aquachem GmbH in 1994. The company is based in Senden, Bavaria, Germany. It is mostly present in water and wastewater industry and also construction, chemical process industry, metal, food, pharma and ATEX applications. Since year 2000, Aquachem is focused on developing and designing fully automatic filter presses. With nearly three decades of experience in using filter presses for solid liquid filtration, Aquachem offers efficient and optimized solutions.

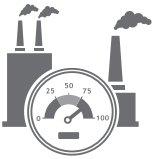
OUR END CUSTOMER: CURRENTA GmbH

CURRENTA GmbH & Co. OHG is the manager and service provider of three CHEMPARK sites located in Germany in Leverkusen, Dormagen and Krefeld-Uerdingen. A joint venture between Bayer and Lanxess offers 70 companies based at CHEMPARK more than 1,000 chemical-related services across the area covering 11 square kilometers. These include utilities, environmental services, safety and security, infrastructure, analytics, vocational training, logistics and maintenance services.



Flowrox Pump References

- > **Customer:** Terrafame, Finland
Products: Flowrox LPP-T65 Hose Pumps
Application: Washing liquid circulation pumps
Benefits:
- Large capacity
 - Moving process water with high solids content
 - Savings in energy



- > **Customer:** Deer Island Waste Water Treatment Plant, USA
Products: Flowrox PC Pump, EL Series
Application: Waste water slurry pumping
Benefits:
- Increased pumping efficiency
 - Savings in maintenance costs



- > **Customer:** Surfactor, Finland
Products: Flowrox LPP-D pumps
Application: Glue feed, color dosing
Benefits:
- Accurate dosing
 - Long maintenance intervals
 - Low maintenance cost



Peristaltic Pumps

Flowrox heavy duty hose pumps are designed for the toughest industrial applications. They are ideal for demanding processes involving abrasive, corrosive, viscous or crystallizing media with high solids content.

Advanced Rolling Design

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 is re-filled with the medium. No backward flow or slip can occur as the hose is squeezed tight by the roller.

Due to their technical features, Flowrox hose pumps provide exact flow per revolution. They also incorporate an advanced rolling design, which eliminates friction, maximizes hose life and lowers energy consumption. Energy efficiency, long hose life and low maintenance generates substantial savings during the life cycle of peristaltic pumps. Lifetime of Flowrox pumps' hoses is 3-5 times longer than conventional hose pumps.



Technical Features

- Only the hose is in contact with the medium
- Positive displacement with no backflow
- Single roller design that enables minimized friction
- Low lubrication need, only 20% that of conventional peristaltic pumps
- Less backflow
- No overheating at high continuous flow rate
- Dry run capability
- Selfpriming up to full vacuum

Trailblazing Pump Technology: This Is How We Roll!

Flowrox LPP-T pumps are equipped with a patented hose flange and reliable in-line pipe connections, as well as a hose leak detection unit. Patented adjustment mechanism 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.

The LPP-T100 is one of the world's largest hose pumps, with a maximum continuous flow of 100m³/h.



Scan the code to watch pump animation.

Pump Model Selection Guide

| Type | Size (DN) | Motorization | Pressure class | Flange drilling | Body material | Inverter | Auxiliaries |
|--|-----------|-----------------|----------------|--|-----------------------------|--------------------------------------|---|
| LPP-T = transfer | 15-100 | GM = Gear motor | 7,5 = 7,5 bar | 1 = - 2 = DIN PN10 | 0 = GRS/Fe 3 = Aluminium | N = None II = Wire connected IP55 | D = Hose leak detector R = Revolution detector F = Forced cooling fan T = Pressure transmitter with display X = Special |
| LPP-D = dosing | | GU = Gear unit | 10 = 10 bar | 6 = ANSI 150 8 = BS TABLE D | | | |
| SLPP-T = smart transfer SLPP-D = smart dosing | | BS = Bare shaft | 16 = 16 bar | 9A = AS TABLE D R1/2" = Male thread R3/4" = Male thread R1" = Male thread | | | |

Example: LPP-T65GM10-2-0-N-D

| Type | Frame size | Model | Max. motor RPM | Power cord plug type | Tube size and material | Auxiliaries |
|---------------|---|-----------------|----------------|---|--|--|
| FXM= metering | 2 = Tubes between 1,9 - 9,5 mm 3 = Tubes between 6,4 - 19,1 mm | S = Smart model | 3 = 175 RPM | 4=125V AC, NEMA 5/15 (US) 5=230V AC, NEMA 6/15 (US) 6=230V AC, CEE7/VII (EU) 7=230V, BS 1363 (UK) 8=230V AC, AS/NZS3112 (AUS) | FXM2: N011= Norprene N092= Norprene N176= Norprene G132= Tygothane T151= Tygon lined Norprene FXM3: N151= Norprene N235= Norprene N268= Norprene N840= Norprene G210= Tygothane T227= Tygon lined Norprene | A = Flow switch B = Basic Flowrox Malibu C = Customized Flowrox Malibu |

Example: FXM-S-36-N011-A



All stages of the LPP-T and LPP-D and their hose design and manufacturing are covered by ISO 9001:2015. They are also ATEX approved.

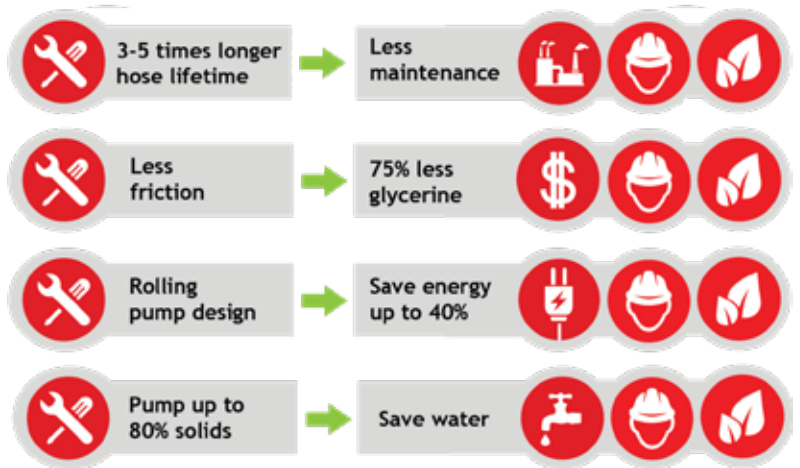
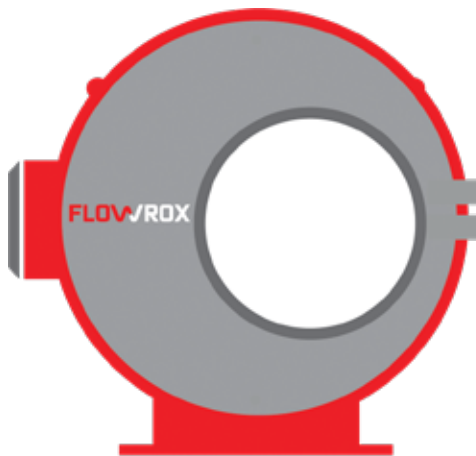
Our Pump Offering

For Transferring, Dosing and Metering

The innovative Flowrox peristaltic 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.

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.

> From Features to Benefits

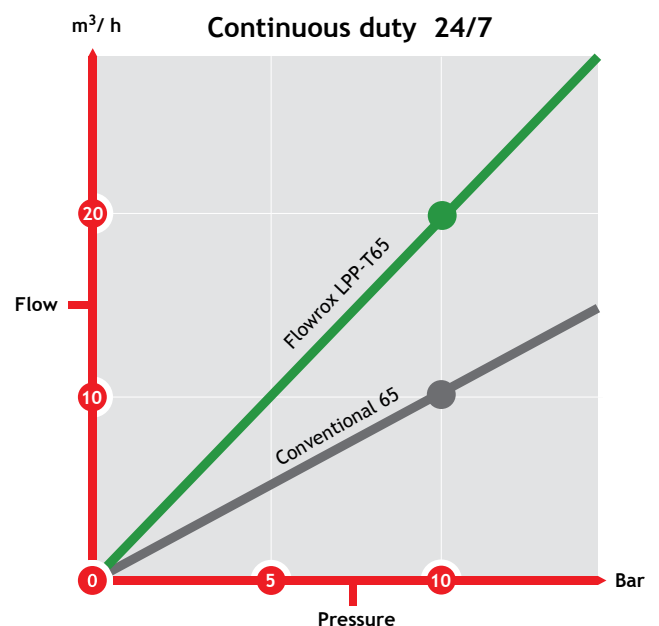


Comparison of Flowrox Technology

Flowrox rolling technology is capable of operating in continuous duty with its maximum pressure and maximum flow in the same point, where the conventional pump has limitations in continuous duty for pressure or flow.

The pump performs even with 95 °C degrees media temperature.

Image: Flowrox hose pump technology vs. conventional technology.



Technical Data of Flowrox LPP and FXM Pumps

| Technical data | LPP-T32 | LPP-T40 | LPP-T50 | LPP-T65 | LPP-T80 | LPP-T100 |
|---------------------------------|-----------------------|---------------------|------------------------|----------------------|----------------------|-----------------------|
| Weight | ~300 kg | ~360 kg | ~650 kg | ~960 kg | ~2450 kg | ~4300 kg |
| Flow/revolution | 0,65 l | 1,25 l | 2,75 l | 5,4 l | 11,6 l | 31,6 l |
| Maximum flow | 5,5 m ³ /h | 8 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 | 7,5 bar | 10 bar |
| Lubricant volume | 0,8 l | 1 l | 2,5 l | 4 l | 8 l | 25 l |
| Hose bore and flange connection | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Motor power | 0,75-4 kW | 1,1-5,5 kW | 1,5-9,2 kW | 3-11,0 kW | 9,2-22,0 kW | 37-75 kW |

| Technical data | LPP-D15 | LPP-D20 | LPP-D25 | Technical data | FXM |
|---------------------------------|-----------------------|-----------------------|-----------------------|---|---|
| Weight | 47 kg | 47 kg | 60 kg | Weight/ Shipping weight | FXM2: 13 / 14 kg FXM3: 20 / 21 kg |
| Flow/revolution | 0,1 l | 0,18 l | 0,3 l | Maximum flow | FXM2: 176 l/h FXM3: 840 l/h |
| Maximum flow | 0,6 m ³ /h | 1,2 m ³ /h | 2,0 m ³ /h | Maximum working pressure | 8,6 bar |
| Maximum pressure | 7,5/16 bar | 7,5/16 bar | 7,5/16 bar | Maximum fluid temperature | 46° C |
| Lubricant volume | 0,4/1 l | 0,4/1 l | 0,4/1 l | Enclosure | NEMA 4x / IP66 |
| Hose bore and flange connection | 15 mm | 20 mm | 25 mm | Plug type (operating voltage requirement 96VAC to 264VAC) | 4=125V AC, NEMA 5/15 (US) 5=230V AC, NEMA 6/15 (US) 6=230V AC, CEE7/VII (EU) 7=230V, BS 1363 (UK) 8=230V AC, AS/NZS3112 (AUS) |
| Motor power | 0,55-1,1 kW | 0,55-1,1 kW | 0,75-1,5 kW | | |



The Flowrox pumps are suitable for large-scale project deliveries with a selection of Flowrox valves.

Progressive Cavity Pumps

Flowrox progressive cavity (PC) pumps are ideal for demanding industrial slurry and paste pumping applications, especially with highly viscous or shear sensitive liquids and sludges.

Advanced Spiral Technology

In PC pumps, the pumped medium continuously shifts spaces (progressing cavities) between the rotor and the stator, enabling nearly pulsation-free pumping. With Flowrox technology it is possible to deliver up to 10 bar of pressure per single stage. This is possible with our evenwall stator technology that forms the heart of the entire pump.

Other benefits:

- Over 30% higher pumping capacity compared to a conventional PC pump with same rpm
- Save energy up to 15% compared to a conventional model
- Minimized maintenance time enables the highest run time possible

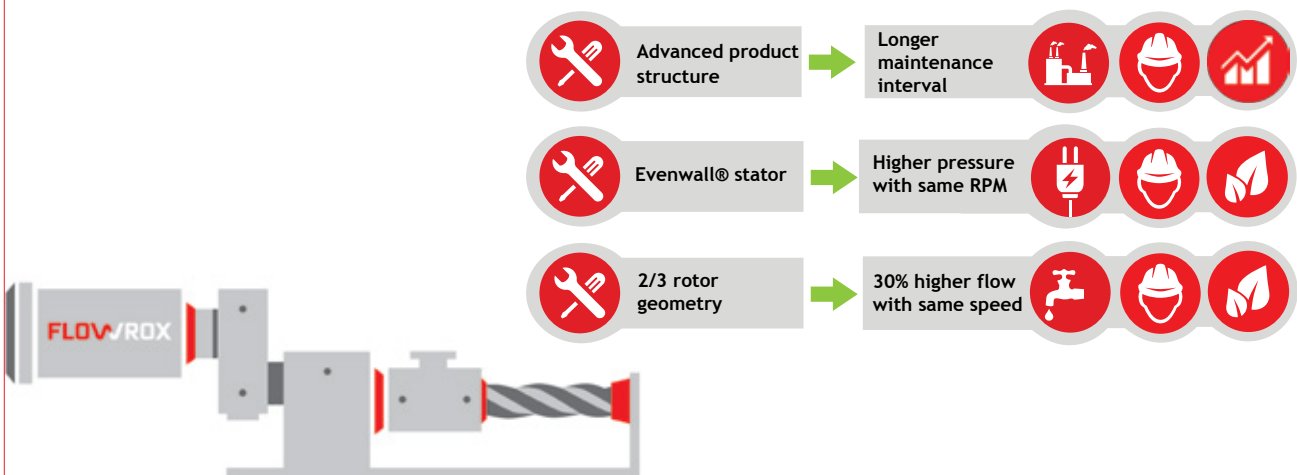


Technical Features

- Combination of an elliptic rotor and a stator with even wall thickness
- More pressure with less strain
- Increased flow per revolution
- Long rotor/stator lifetime
- Less backflow

Through advanced technology and precise design, Flowrox PC Pumps offer you significant savings by reducing pumping costs.

> From Features to Benefits



Technical Data

| Technical data | E2/10 | E4/10 | E10/10 | E20/10 | E35/10 | E70/10 | E150/10 | E250/10 |
|--------------------------------|-------|-------|--------|--------|--------|--------|---------|---------|
| Weight kg | 110 | 135 | 180 | 270 | 350 | 630 | 1360 | 2300 |
| Maximum flow m ³ /h | 1,7 | 3,4 | 6,8 | 14,1 | 35,6 | 69,6 | 141,1 | 227,6 |
| Max. pressure bar | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Flange connection DN | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
| Motor power kW | 1,5 | 3 | 3 | 7,5 | 11 | 30 | 75 | 90 |

| Technical data | EL50/6 | EL100/6 | EL200/6 | EL330/6 |
|--------------------------------|--------|---------|---------|---------|
| Weight kg | 140 | 540 | 1120 | 1900 |
| Maximum flow m ³ /h | 38,2 | 71,1 | 133,9 | 187,9 |
| Max. pressure bar | 6 | 6 | 6 | 6 |
| Flange connection DN | 50 | 150 | 200 | 250 |
| Motor power kW | 11 | 15 | 30 | 55 |

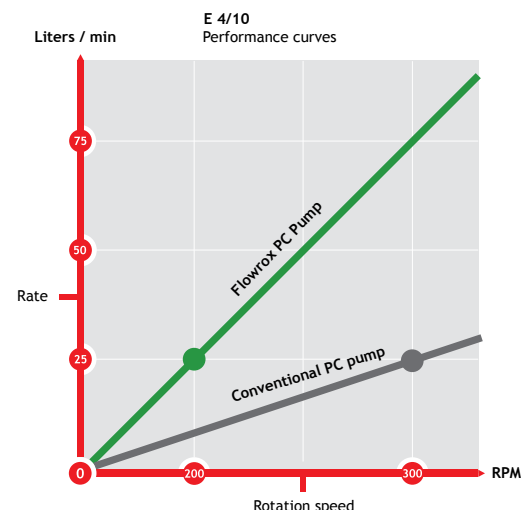
| Technical data | D004/12 | D010/12 | D025/12 | D075/12 |
|--------------------------------|---------|---------|---------|---------|
| Weight kg | 14 | 14 | 15 | 17 |
| Maximum flow m ³ /h | 0,04 | 0,10 | 0,25 | 0,75 |
| Max. pressure bar | 12 | 12 | 12 | 12 |
| Flange connection DN | R1" | R1" | R1" | R1" |
| Motor power kW | 0,37 | 0,37 | 0,55 | 1,1 |

Comparison of Flowrox Technology

When the Flowrox PC pump performance is compared with conventional PC pumps, Flowrox 2/3 geometry pumping elements need less RPM than conventional 1/2 geometry pumping elements to achieve the same flow rate.

Image:

Flowrox spiral technology vs. conventional technology.
Less RPM needed to achieve the same flowrate.



Smart Features

Enhance your performance with our Digital Services. Flowrox Smart Features can be included into any old or new delivery. The Smart pumps are next generation solutions delivering data and information in order to provide reliable and cost-efficient production. Real time information from site results in optimized production with maximized output and minimized unplanned shutdowns.

Digital Services

The SLPP and FXM Smart pump series provide Flowrox Malibu™ functionality, i.e. online information about the pumping process, pumping performance and condition of the pump.

The Smart Pump SLPP is equipped with instrumentation and intelligent motor diagnostics for continuous monitoring of the pumping performance.

The Flowrox Smart Pump combined with the Malibu IIoT (Industrial Internet of Things) user interface enables advanced reporting and data analytics, making your process more reliable and transparent. Malibu™ is accessible on any device with an Internet browser.



| Technical Features | SLPP | FXM |
|--|--------------------|------------|
| Real time data available in Flowrox Malibu | ✓ | ✓ |
| Pre-fail indications from the sensors | ✓ | * |
| Vibration & temperature measurements | ✓ | * |
| Pressure measurement at the pump inlet/ outlet | ✓ | * |
| Medium temperature measurement | ✓ | * |
| Connectivity | 4G/3G, WIFI or LAN | RJ45 cable |

* Available upon request, contact info@flowrox.com

> From Features to Benefits

- **Online pump performance monitoring**
 - ➔ Detect issues before they become a problem, enables production optimization
- **Automatic pre-fail indications**
 - ➔ Savings in maintenance & unexpected shutdown costs
- **Advanced analytics and reporting tools**
 - ➔ Compare and analyse data.
 - Access to detailed pumping data to assess long-term pump performance
- **Easy accessibility via the Internet**
 - ➔ Access wherever you are



Flowrox Malibu™ IIoT user interface is simple and easy to use.



Flowrox Smart LPP-T & FXM pumps:

The SLPP and FXM Smart pump series provide Flowrox Malibu functionality, i.e. online information about the pumping process, pumping performance and condition of the pump.

The Flowrox Smart Pump combined with Malibu enables advanced reporting and data analytics, making your process more reliable and transparent.

Complementary Products

We provide complementary equipment that is designed to support the optimal flow. Enhance your process with the Flowrox Expulse™ pulsation dampener.

Flowrox Expulse™

It is common for positive displacement pumps to produce pulsation. The Flowrox Expulse™ is a flexible inline pulsation dampener, which quiets noise while settling pressure peaks and uneven flows. The design is based on a double hose structure with resilient inner hose, reinforced outer hose and compressed air between the hoses.

- Absorbs up to 90% of the pulsation
- Up to 10% energy savings
- Reduces hammering of the pipeline and makes pump bearings and gearboxes last longer
- All in one; flexible pipeline connection and dampener
- Flowrox Expulse™ can be installed on any pulsating pump from any brand
- There are no breaking diaphragms or bladders
- Flowrox Expulse™ is self-cleaning
 - ➔ does not collect sediment or particles.



| Technical Data | |
|--------------------------------------|-------------------------|
| Size | DN32-DN100/1 ¼"-4" |
| Hose Material | NR Standard |
| Wetted parts | AISI316 & NR |
| Maximum pressure | 10 bar |
| Maximum temperature | + 75 °C |
| Filling media between dampener hoses | Oil free compressed air |
| Standard features | Threaded ends |
| Auxillaries | Flanges |

➤ From Features to Benefits

- Reduces noise
 - ➔ Quiets the annoying noise of the pulsating pump in the pipelines
- Saves energy
 - ➔ Absorbs up to 90% of pulsations and saves up to 10% of energy by temporarily storing it in the flexible inner hose and filler gas
- Easy, independent and reliable
 - ➔ Easy to install for any pulsating pump
- Protects pump bearings and gearbox
 - ➔ Reduces pipeline pulsations
- Simple and flexible
 - ➔ Easy and fast to maintain



Flowrox LPP-T pump with 80 mm Flowrox Expulse™ stabilizing the flow in a filter feed application.

Spares & Services

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

Optimal Pump Hoses and Tubes for Each Media

Our 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.

FXM tube material options are Norprene®, Tygothane® and Tygon lined Norprene.

Auxiliaries

Revolution Sensor & Pressure Transmitter



The revolution sensor calculates the cycles of the pump. Pressure transmitter can be used to detect overpressure of the pipeline.

The Hose Leak Detector



The hose leak detector indicates hose leakage into pump housing. It automatically stops the rotation of the pump when connected to the control system.

Services

We offer prompt support, spare parts and services in order to maximize your pump performance.

We manufacture and deliver original spare parts and components for all Flowrox products (hose pumps, PC pumps, valves) as well as original and compatible replacement components for other brands' products.

We have the capability to deliver and manufacture stators, rotors, drive shafts, coupling rods, joint assemblies, bearings sets and sealings for most commonly known PC pumps, such as Allweiler, Seepex, Netzsch, Mono, PCM and Bornemann with 20 years experience.



- On-time trouble-free delivery of spares and services
- Cost savings through optimized service cycles and reduced downtime of equipment
- Longer life cycles for equipment



This is How We Roll!

Check out Flowrox Peristaltic Pumps in action by scanning this QR code.



Progressive Pumping!

Check out Flowrox Progressive Cavity Pumps in action by scanning this QR code.



Get Smarter!

Check out Flowrox Digital Services by scanning this QR code.



Flowrox: Proven Performance

Flowrox is a family-owned global company headquartered in Finland. It specializes in flow control, pumping, filtration solutions and environmental technologies. Flowrox products and services are enhanced with IIoT solutions and intelligent systems. Flowrox serves a number of process industry applications, especially in mining, minerals processing, chemical, energy and environmental industries.

Flowrox has subsidiaries in Australia, Chile, China, Peru, South Africa, Russia, Sweden and the United States as well as more than 230 sales representatives in 80 countries.



Contact your local Flowrox representative



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