Watson-Marlow Pumps Group has six world-class factories supported by direct sales operations in 24 countries and distributors in more than 50 countries. For contact details visit our website: www.wmpg.com

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

Supplied and Supported in Ireland by Lennox Pump and Process
www.lennoxpumps.ie

Tel: +44 (0)1326 370370
info@wmpg.co.uk
www.wmpg.co.uk

Watson-Marlow Pumps Group
Falmouth, Cornwall TR11 4RU, UK
**Good News... a pump with no seals or valves to wear, clog, or leak**

Bredel is the world's leading manufacturer of peristaltic pumps with the largest range of pumps and pump element materials.

Today Bredel has more than 100,000 peristaltic pumps working non-stop around the globe. With operating pressures up to 16 bar and flow rates up to approximately 100 cubic metres/hour, Bredel hose pumps save time and money by successfully handling the toughest applications in a broad range of industries.

**Engineered Simplicity**

The pumping action results from alternately compressing and relaxing a machined hose between the pump housing and the compressing shoes. The fluid ahead of the shoe is pushed towards the discharge while the rebounding hose behind the shoe draws more fluid in. With 100% compression at all times, the pump does not slip, providing unbeatable metering accuracy and pressure performance. With no pump seals, seats or valves, abrasive slurries are no problem. With the fluid contacting only the inner wall of the hose, the pump is perfect for aggressive chemicals.

**Save time and money**

High maintenance diaphragm, rotary lobe, or progressive cavity pumps can't match the rugged, reliable 24/7 dependability of the SPX which:

- No ancillary equipment, check valves or sealing water flush systems
- Pumps abrasive slurries, corrosive acids, large solids and gaseous liquids with ease
- Ideal for high viscosity or shear sensitive product
- Run-dry indefinitely without damage
- EHEDG certified
- Minimal maintenance - just change the hose
- Suction lift capability up to 9.5 metres and self-priming
- ±1% metering accuracy

**Advantages**

<table>
<thead>
<tr>
<th>Comparative advantages</th>
<th>Long-coupled</th>
<th>Close-coupled</th>
<th>SPX direct-coupled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of maintenance</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected gearbox - lubricant seal in</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Reliability - bearings in</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Compact footprint</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faster installation - no drive alignment</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

**Chemical**

Corrosive acids and bases

**Water and Waste Treatment**

Lime, kalic, sodium hypochlorite, ferric chloride and sludges

**Paint and pigments**

Dispersion mill feed, pigment and latex transfer

**Pulp and Paper**

Dyes, sizing agents, retention aids and titanium dioxide

**Mining**

Tailing slurries, sludges and reagents

**Ceramics and glass**

Fine china, brick and tiles

**Construction**

Cement, coatings, spray concrete, colorants and aggregate

**Printing and packaging**

Varnishes, inks, coatings and adhesives

**Food and beverage**

CIP applications, wine, brewery, dairy, bakery, flavorings and additives

**Textiles**

Fibers, dyes and acids

**OEM**

Versions available for system suppliers
Chemical metering

At a water treatment plant, influent is received through several very long pipelines. After preliminary processing, the influent goes through a scrub-down to reduce hydrogen sulfide content from as much as 250 ppm to less than 0.1 ppm. Diaphragm and PC pumps were replaced after experiencing long downtimes, high maintenance costs and poor performance. Bredel hose pumps are used in this process to transfer and meter sodium hypochlorite, sodium hydroxide, and sodium bisulphate.

SPX10, SPX15, SPX20

Performance

SPX10
Max flow: 145 litre/hour
Capacity: 0.022 litre/rev
Max discharge pressure: 7.5 bar
Max temperature: 80°C
Inner diameter pump element: 10 mm
Lubricant required: 0.25 litres
Starting torque: 47 Nm

SPX15
Max flow: 525 litre/hour
Capacity: 0.083 litre/rev
Max discharge pressure: 7.5 bar
Max temperature: 80°C
Inner diameter pump element: 15 mm
Lubricant required: 0.5 litres
Starting torque: 60 Nm

SPX20
Max flow: 820 litre/hour
Capacity: 0.152 litre/rev
Max discharge pressure: 7.5 bar
Max temperature: 80°C
Inner diameter pump element: 20 mm
Lubricant required: 0.5 litres
Starting torque: 85 Nm

Dimensions
Note: measurements in mm

How to use the curves
1. Flow required indicates pump speed
2. Calculated discharge pressure
3. Net motor power required
4. Product temperature
5. Calculated discharge pressure
6. Maximum recommended pump speed

Note: The area of continuous operation diminishes with increased product temperatures. For product temperatures >40°C, the area of continuous operation reduces to the corresponding red temperature line.

Location is “E” noted on dimensional drawing on next page
A leading brewer had been using diaphragm pumps to meter highly abrasive diatomaceous earth slurry but was experiencing high downtime due to abrasive wear. The brewer replaced these pumps with Bredel hose pumps, dramatically reducing maintenance and all but eliminated downtime. Based on this success, the brewer installed 6 hose pumps to transfer abrasive slurry of spent yeast. The pumps replaced rotary lobe pumps which required excessive maintenance to replace mechanical seals and lobes.
No aeration

A plant that produces fine quality bone china was using a two-stroke reciprocating type piston pump to transfer slip from the slip house to the casting shop. Due to entrained air in the slip, pinholes were forming in the surface of the cast body, which was impairing the quality of the finished product. The slip is thixotropic and highly abrasive. Changing over to a peristaltic pump eliminated this problem. Its glandless construction prevented the ingress of air.
### Performance

**SPX65**
- Max flow: 32,200 litre/hour
- Capacity: 6.7 litre/rev
- Max discharge pressure: 16 bar
- Max temperature: 80°C
- Inner diameter pump element: 80 mm
- Lubricant required: 20 litre
- Starting torque: 1150 Nm

**SPX80**
- Max flow: 39,100 litre/hour
- Capacity: 11.7 litre/rev
- Max discharge pressure: 16 bar
- Max temperature: 80°C
- Inner diameter pump element: 80 mm
- Lubricant required: 40 litre
- Starting torque: 2000 Nm

**SPX100**
- Max flow: 52,900 litre/hour
- Capacity: 20 litre/rev
- Max discharge pressure: 16 bar
- Max temperature: 80°C
- Inner diameter pump element: 100 mm
- Lubricant required: 60 litre
- Starting torque: 3100 Nm

### Dimensions

**Note:** measurements in mm

#### How to use the curves

1. Flow required indicates pump speed
2. Calculated discharge pressure
3. Net motor power required
4. Product temperature
5. Calculated discharge pressure
6. Maximum recommended pump speed

#### Solids - no problem

When wood chips are cooked in a digestion liquid, a treated residue known as black liquor soap is derived from the digestion process. Paper mills usually use a large gear pump or other rotary type pump to handle this soap, often with considerable difficulty. Suction problems, dry running, and small wood particles only make things worse. The Bredel hose pump provides the optimum solution: It is abrasive resistant, very capable of handling solids, and because there are no shaft seals, it is allowed to run dry.
SPX280, SPX2100

**Performance**

**SPX280**
- Max flow: 78,000 litre/hour
- Capacity: 23.4 litre/rev
- Max discharge pressure: 16 bar
- Max temperature: 80°C
- Inner diameter pump element: 80 mm
- Lubricant required: 80 litre
- Starting torque: 3,400 Nm

**SPX2100**
- Max flow: 108,000 litre/hour
- Capacity: 40 litre/rev
- Max discharge pressure: 16 bar
- Max temperature: 80°C
- Inner diameter pump element: 100 mm
- Lubricant required: 120 litre
- Starting torque: 5,300 Nm

**Dimensions**

Note: measurements in mm

How to use the curves:
1. Flow required indicates pump speed
2. Calculated discharge pressure
3. Net motor power required
4. Product temperature
5. Calculated discharge pressure
6. Maximum recommended pump speed

- For more information, please consult your Bredel representative.
- Duplex executions are also available for the series SPX10 up to SPX65.
- Very limited floor space required.

High flow

A large mining company needed several pumps to transfer sludge with flow rates up to 68 m³/h. The unique duplex hose pump was the solution for this application. This unit has two pump heads mounted on a single drive. With the pump shoes positioned at 90 degree intervals, the pump is capable of producing higher flow rates than a single pump, but with much smaller power and space requirements than two pumps.
The SPX DuCoNite® pump is used for the most challenging applications. A high-tech surface-protection method has rendered the pump ultra-resistant to aggressive liquids. The DuCoNite hose pumps are available in five pump sizes - with capacities up to 5,250 litre/hour and pressures up to 16 bar.

The DuCoNite hose pump reliably handles a variety of harsh materials, such as sodium hypochlorite, titanium dioxide, sodium hydroxide, lime slurry, acidic liquids, solvents and resins.

DuCoNite Advantage
SPX hose pumps require minimal maintenance; to completely rebuild a SPX simply change the hose. When protecting the pump is still a concern, the SPX DuCoNite® pump gives you the added advantage:

“Beyond the hose” protection against common water and waste water treatment chemicals

Paint-free pump housing perfect for wash-down in the food industry

Available in SPX10, SPX15, SPX20, SPX25, and SPX32 pumps for metering and transfer

SPX10 DuCoNite
Maximum flow: 145 litre/hour
Maximum discharge pressure: 7.5 bar

SPX15 DuCoNite
Maximum flow: 820 litre/hour
Maximum discharge pressure: 7.5 bar

SPX20 DuCoNite
Maximum flow: 954 litre/hour
Maximum discharge pressure: 7.5 bar

SPX25 DuCoNite
Maximum flow: 2,498 litre/hour
Maximum discharge pressure: 16 bar

SPX32 DuCoNite
Maximum flow: 5,250 litre/hour
Maximum discharge pressure: 16 bar

SPX DuCoNite® - the answer for aggressive liquids

SPX DuCoNite® is a three step metallic surface treatment process with proven excellent chemical resistance to a myriad of chemicals, including many of the common aggressive fluids pumped by hose pumps around the globe:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Concentration</th>
<th>Fluid Temp</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hypochlorite</td>
<td>up to 18%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Sodium Bisulfite</td>
<td>38%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Ferric Chloride</td>
<td>up to 50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Ferrous Chloride</td>
<td>35%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Alum</td>
<td>50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Hydrofluosilic Acid</td>
<td>18-24%</td>
<td>70-122C</td>
<td>B</td>
</tr>
<tr>
<td>Sodium Hydroxide</td>
<td>20-50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Potassium Permanganate</td>
<td>50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Aqueous Ammonia</td>
<td>20%</td>
<td>70-122C</td>
<td>B</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>93-97%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Zincorthophosphate</td>
<td>25%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td>50%</td>
<td>70-122C</td>
<td>A</td>
</tr>
<tr>
<td>Nitric Acid</td>
<td>25%</td>
<td>70-122C</td>
<td>A</td>
</tr>
</tbody>
</table>

SPX DuCoNite®
Chemical Duty Protection

Developed and tested by Bredel in conjunction with expert metallurgists, DuCoNite® is a three step metallic surface treatment process with proven excellent chemical resistance to a myriad of chemicals, including many of the common aggressive fluids pumped by hose pumps around the globe.

Solids Handling
A producer of polycarbonate resin pellets, was experiencing problems pumping effluent. The strips had become trapped in the double-diaphragm pump the company was using to transport the effluent to a filter press.

Constantly blocked, the diaphragm pump was, in effect, acting as a filter. The Bredel hose pump now transfers the effluent easily, virtually eliminating downtime. It has also improved the effectiveness of the filter press by as much as 35 times.
**Clean-In-Place: SP/40, SP/50**

**Performance**

**SP/40 CIP**
- Maximum flow: 4,800 litre/hour
- Capacity: 1.33 litre/rev
- Maximum discharge pressure: 16 bar
- Inner diameter pump element: 40 mm
- Lubricant required: 10 litre
- Minimum starting torque: 320 Nm

**SP/50 CIP**
- Maximum flow: 8,500 litre/hour
- Capacity: 2.92 litre/rev
- Maximum discharge pressure: 16 bar
- Inner diameter pump element: 50 mm
- Lubricant required: 20 litre
- Minimum starting torque: 620 Nm

**Features of CIP Pumps**

- Recommended for sanitary processes, or other applications requiring regular cleaning of the process lines.
- Maximum sterilization temperature 120 °C
- EHEDG certified
- Food approved pump element available
- NSF® registered food grade lubricant
- Stainless steel sanitary connectors available
- Process pressures up to 16 bar
- Shoes on the rotor retract automatically for cleaning of pump element inside
- Cam actuated electrically, pneumatically or manually

**Dimensions**

Note: measurements in mm

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**Shear sensitive**

A canning operation uses a Bredel hose pump to transfer peaches from holding tanks to its canning line. The company had been using centrifugal pumps, but was experiencing a high percentage of damaged peaches. The soft pumping action of the peristaltic pump eliminates shear and has dramatically reduced the amount of damaged or unacceptable production.

The company also likes the dependability, low maintenance and ability of the pump to run 24/7 throughout the entire canning season.
The hose is the key

The machined hose is the single most vital component for the performance, durability, and efficiency of the hose pump. To ensure perfect compression and consistent, reliable performance, Breidel manufactures hoses from high quality compounded rubbers, reinforced with four individual layers of braided nylon and finished by high precision machining. Perfect compression eliminates slip which, in other pumps, can destroy shear sensitive product, reduce metering accuracy, or allow abrasive slurries to wreak havoc on wetted parts. Breidel engineers hoses to meet the flow, pressure and temperature characteristics of your toughest applications.

Hose construction

The essential component of high-performance hose pumps is a hose that is constructed of layers of rubber reinforced by winding several layers of nylon cords. The inner and outer layers are extruded. The inner layer is available in a range of rubber compounds. After the hose is constructed, it is then machined. Machining is the final step in hose manufacture and is critical to insure that exact tolerances are held.

Precision hose ensure
- Tight tolerances for low stress on bearings
- Perfect compression for long life
- Consistent capacity independent of varying suction and discharge conditions

Accessories

1. Discharge Pulsation Dampener
   Operates in the discharge line and can also be used as a pressure relief and injection valve.
   Advantages:
   - Eliminate up to 90% of discharge pulsations
   - Protects pump, pipeline and instrumentation

2. Inlet Pulse Accumulator (IPA)
   Installing this accessory on the suction side is only recommended to eliminate the impulse losses and to achieve optimum hose life. When the inlet conditions cannot be improved, the solution is to mount the IPA in a vertical position against the inlet flange. Positive and negative pressure spikes in the suction line during pump operation can be effectively eliminated, resulting in quieter operation and extended hose life.

3. High Level Sensor
   Will switch the pump off in case of a high liquid level. If a hose fails, the product will be contained within the pump. This sensor plugs directly into the breather and senses a high lubricant/product mixture level inside the housing, which will activate a contact relay and switch the pump off.

4. Variable Frequency Drive (VFD)
   When pump capacity has to be flexible or the process needs to be set, use a VFD. The VFD is a fully integrated frequency inverter that has:
   - Clockwise or counterclockwise rotation
   - Variable speed controls
   VFD comes installed on the pump, just connect the power supply.

Hose options

- **NATURAL RUBBER (NR)**
  - Outstanding abrasion resistance. Generally resistant to acids and alcohols.
  - Max. fluid temp 80°C
  - Min. fluid temp -20°C

- **BUNA N (NBR)**
  - Meets FDA and 3A. Resistant to oils, greases, alkalis and detergents.
  - Max. fluid temp 80°C
  - Min. fluid temp -10°C

- **EPDM**
  - Excellent chemical resistance, especially to ketones, alcohols and concentrated acids.
  - Max. fluid temp 90°C
  - Min. fluid temp -10°C

- **CSM**
  - Outstanding chemical resistance to highly concentrated acids and bases.
  - Max. fluid temp 80°C
  - Min. fluid temp -10°C