



Energy Flow Solutions
ChemPharma Flow Solutions

ELRO[®] IP/ XP Peristaltic Pumps

www.cranecpe.com



March 2014

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ
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CRANE FLUID HANDLING

1 ELRO Peristaltic Pumps

2 ELRO Series IP

3 ELRO Series XP

4 Accessories

5 ELRO Applications

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ELRO®





	IP	XP	M
Capacity [m³/h]	0,1 - 28	0,6 - 50	3 – 19,5
Max pressure [bar]	13	13	2
ATEX	Optional	No	Optional
24/7 Capability	Yes	Yes	No
Hose Material	NR*, NBR*, CSM, EPDM	NR, NBR, CSM	NR, NBR, CSM
Weight [kg]	12-123	18-254	52-75
Vacuum system	Hose in hose	Diaphragm	Hose in hose
Early warning system	Yes	No	No

▶ Safety (IP), Capacity (XP) & Mobility (M) is the ELRO portfolio

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I	10	S	B	A	C	-	A
Pump Type	Pump Size	Connections	Hose & Lubricant	Pump Pressure	Paint	Port orientation	Base Frame

Code	Pump Type
I	IP
x	XP

Code	Pump Size
10	IP 100
20	IP/XP 200
40	IP/XP 400
60	IP 600
80	IP/XP 800

Code	Connections
E	Stainless Steel NPT
R	Stainless Steel RJT
S	Stainless Steel BSP
K	Polypropylene BSP
T	Polypropylene NPT

Code	Pump Pressure
A	0 – 2 bar
B	2 – 4 bar
C	4 – 6 bar
D	6 – 8 bar
E	8 – 10 bar
F	10 – 13 bar

Code	Paint finish
-	Silver
E	Acid proof
C	Customer specific

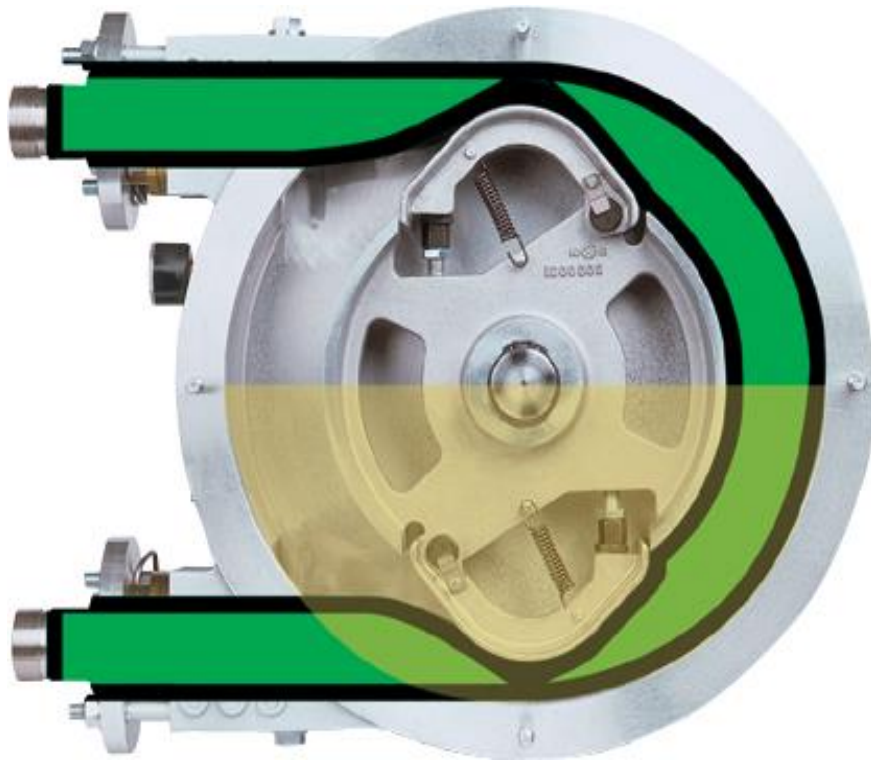
Code	Base frame
A	Steel painted (150-180)
B	Steel painted (110-140)
C	Stainless steel
D	Steel painted movable
E	Stainless steel moveable
F	Stainless steel specified
G	Stainless steel painted
J	Steel painted (SF350)

Code	Hose & Lubricant
A	NBR electric conductive + silicon
B	NBR + silicon
C	CSM + silicon
D	NBR + glycerin
E	EPDM + silicon
F	EPDM + glycerin
G	NR + glycerin
H	CSM + silicon

Code	Position
-	Left / top
A	Left / bottom
B	Right / top
C	Right / bottom
D	Top / left
E	Top / right
X	Left / full fabric coating
Y	Right / full fabric coating
Z	Top / full fabric coating

ELRO[®] Peristaltic Pumps

Operating Principle of ELRO[®] peristaltic pumps



Step 1 from 4:

The rotor rotates within the pump housing filled with lubricant and compresses the pumping hose with the sliding shoe. This process generates a hermetic separation between suction and discharge side.

Step 2 from 4:

Once the second sliding shoe compresses the hose, a completely enclosed pumping chamber is formed. This volume corresponds exactly to half the pump capacity per rotation. A vacuum is also generated inside the pump housing, supporting the elasticity of the hose allowing restoration to its original full cross-section

Step 3 from 4:

The rotation of the rotor forces the pumped medium inside the hose towards the outlet port on the discharge side. During each opening of the hose a vacuum is created on the suction side ensuring constant suction. It also takes place when the hose is empty giving high suction conditions.

Step 4 from 4:

With each rotation the pumping chamber (hose) is reformed and the suction capability is renewed.

Selecting the right pump for the required application

How to chose the right pump?

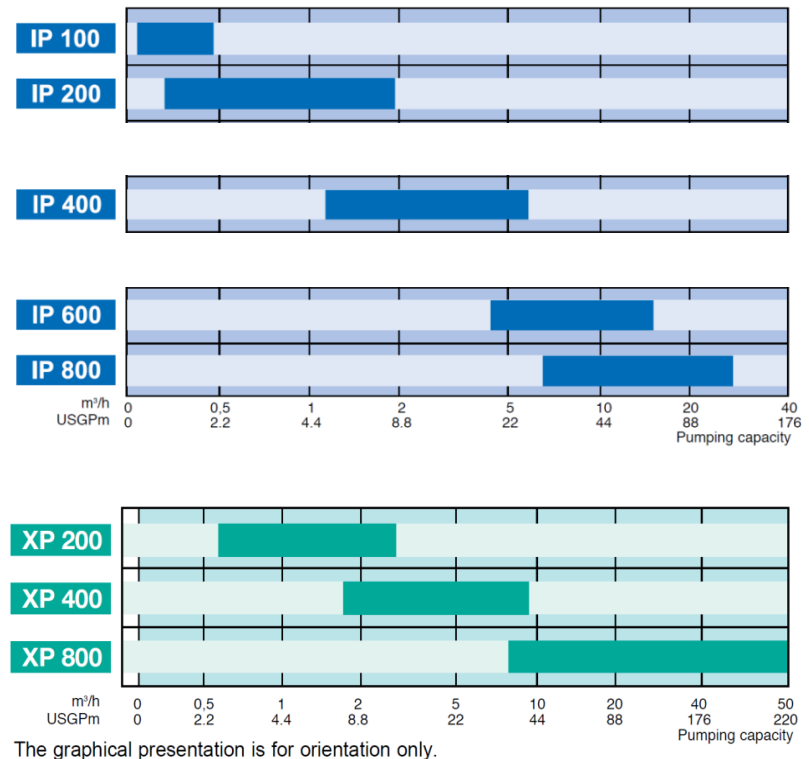
The Comparison of pump capacity depends on the pump size (hose cross section) and number of revolutions per minute.

The most essential points for lower wear operation of stationary ELRO® Pumps are apparently by the following dependencies:

- Pumping media ↔ Speed
- Media temperature ↔ Reduction of flexibility
- Discharge pressure ↔ Hose Pinch
- Operation time per day ↔ Continuous
Intermittent
Short period

For the specific application it is important to know:

- Mobile: yes/no ?
- ATEX requirements
- FDA approval
- Required capacity (m³/h)

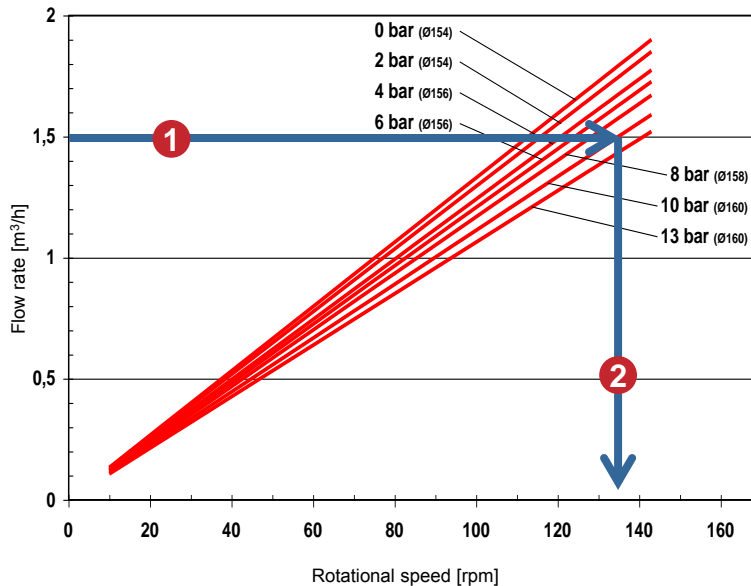


Example for peristaltic pump selection

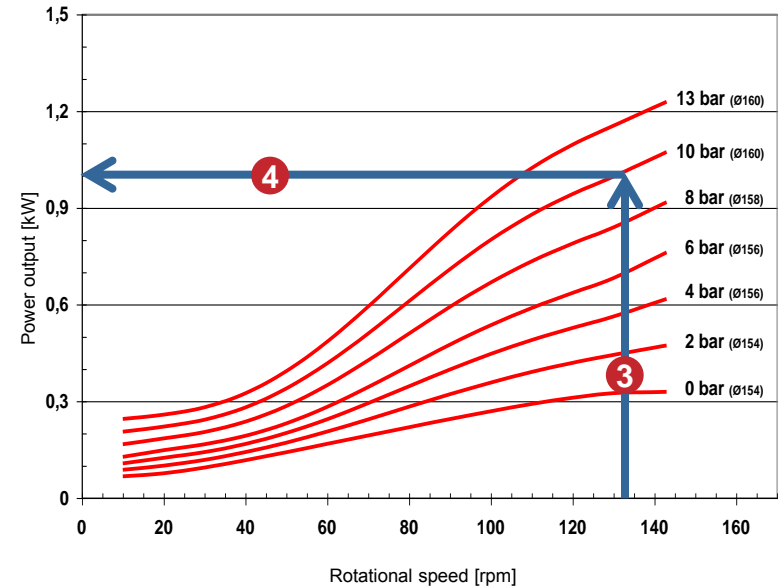
Flow rate of 1,5 m³/h with a discharge pressure of 10 bar is required. The recommend pump for this application is the IP200.

The performance diagram provides the required rotational speed of the pump drive motor (132 rpm). With the performance diagram of the pump drive motor the power output can be determined.

Performance diagram – IP 200



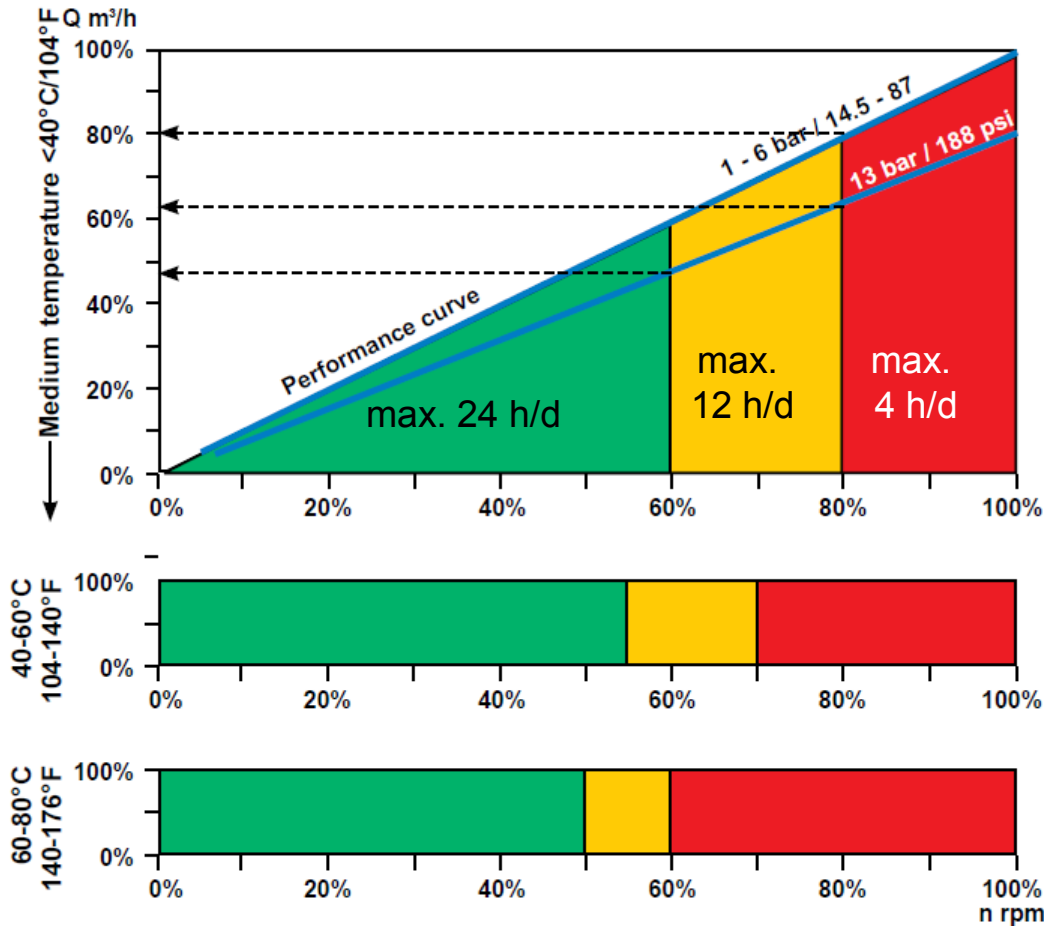
Performance diagram – pump drive motors



Step 2 provides the rotational speed requirements to enable the selection of the correct drive motor for the peristaltic pump.

The pump drive motor requires a minimum power output of 1 kW (step 4 in the performance diagram).

Pump selection regarding running time per day



In order to increase the hose lifetime it's recommended to reduce the max. speed depending on

- Running time per day
- product temperature
- discharge pressure range.

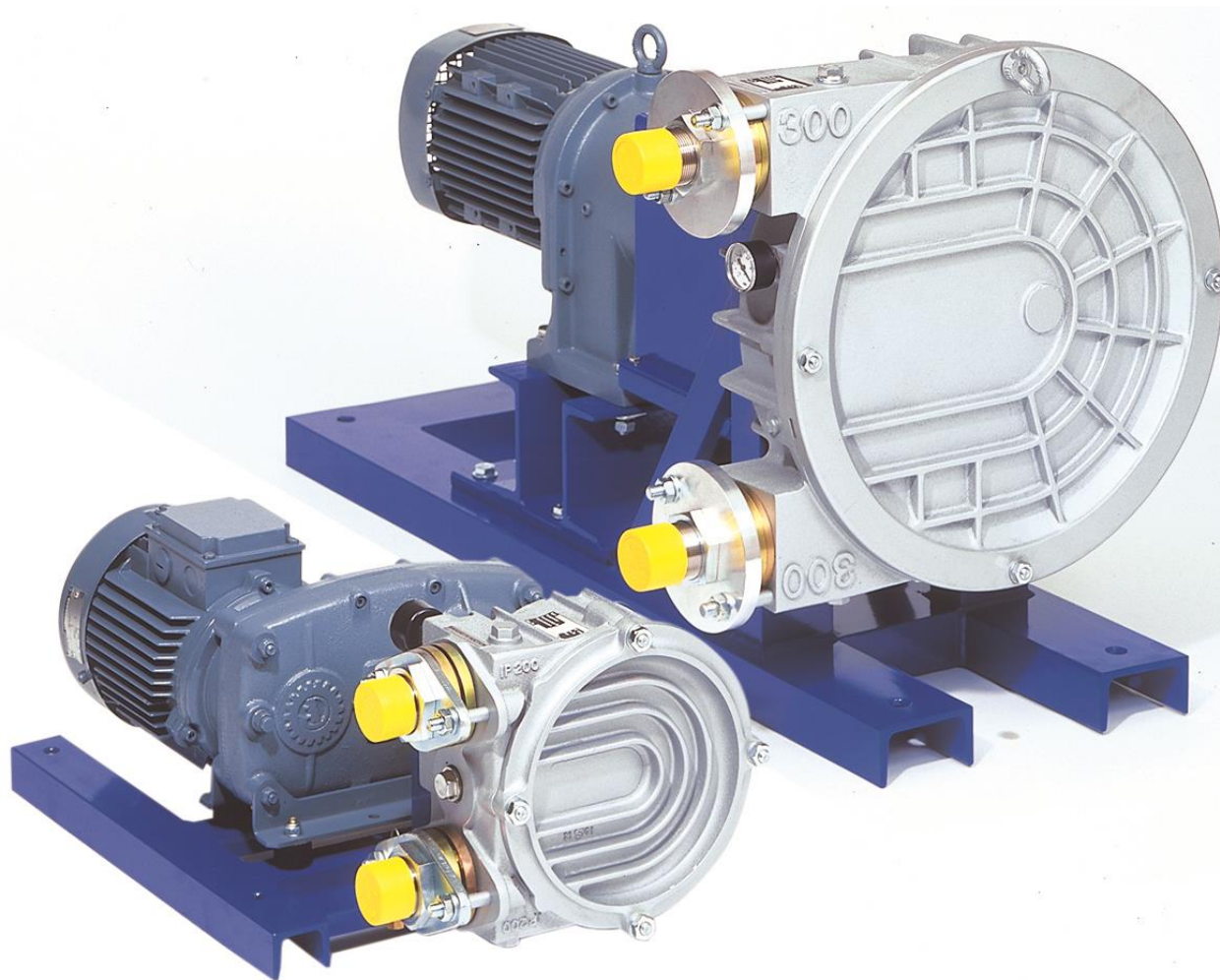
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2 **ELRO Series IP**

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Introduction

The IP series of ELRO peristaltic pumps distinguish themselves through a gentle transport of liquid or viscous media. Also capable of handling abrasive, shear-sensitive products with long fibers and solids. Over the years they have become an integral part in the pump pool of many operators.

Main application

- Chemical industry
- Ceramic and porcelain industry
- Food and beverage industry
- Breweries
- Cosmetic and pharmaceutical industry
- Power stations
- Color and painting industry
- Waste and disposal industry



Technical Features

- Dry self priming 9.5 m
- No sealing
- Only one wear part, economical
- Smooth pumping
- Long fibrous, abrasive or/ and high viscous media
- Ideal for medium with solids
- Dry running
- Straight flow line, easy cleaning
- High discharge pressure
- Variable flow regulation

	Pump capacity [l/rev]	Inner hose diameter [mm]	Max. speed [rpm]	Drive output min/max [kW]	Pump Weight [kg]
IP 100 (1")	0,07	15	142	0,37 - 1,1	12
IP 200 (1 1/4")	0,22	30	142	0,55 - 1,5	16
IP 400 (2")	1,65	50	60	1,5 - 5,5	51
IP 600 (2 1/2")	4,45	60	60	3,0 - 11	123
IP 800 (3")	7,8	70	60	5,5 - 18,5	248

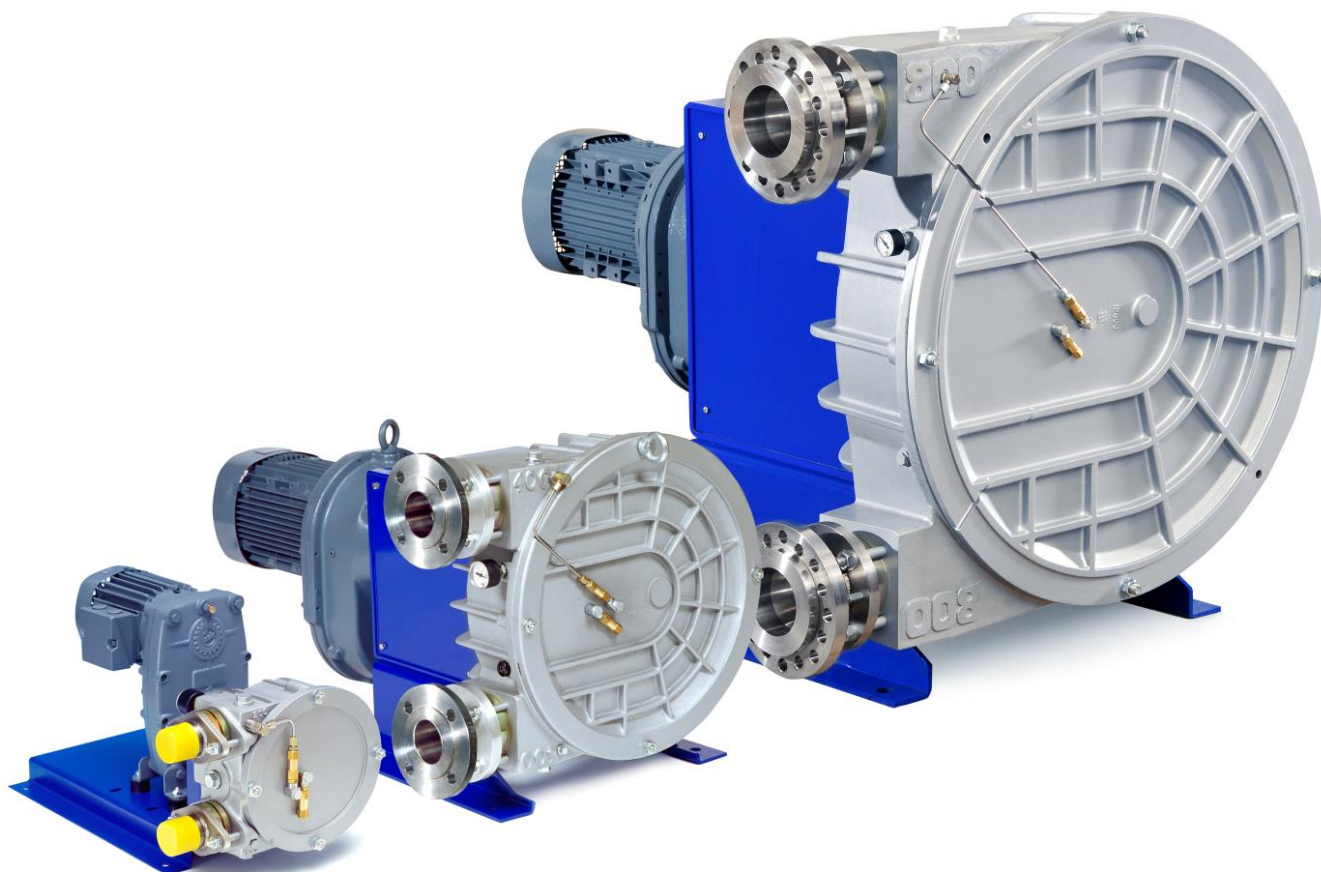
1 ELRO Peristaltic Pumps

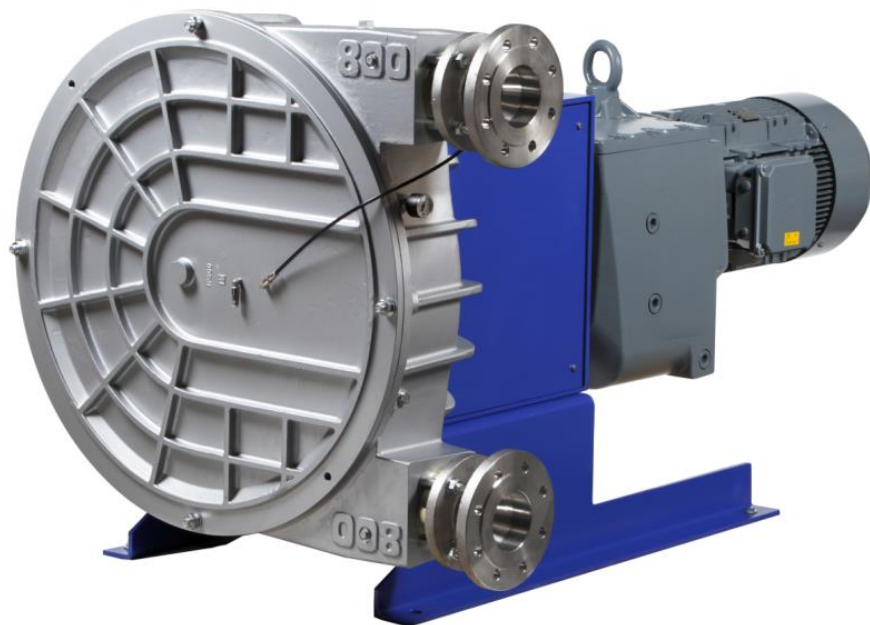
2 ELRO Series IP

3 **ELRO Series XP**

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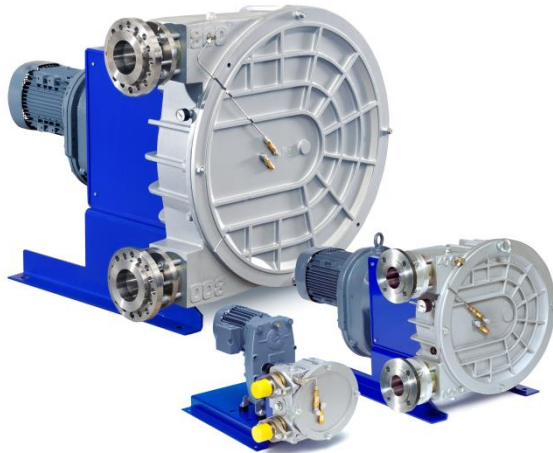


Introduction

The newly developed ELRO® peristaltic pumps of series XP are characterized by a high pumping capacity at low rotary speed. The amply dimensioned cross-section of the hose enables the transport of fluids with high solids content.

Main application

- Chemical industry
- Ceramic and porcelain industry
- Construction industry
- Power plants
- Color and painting industry
- Waste and disposal industry
- Galvanic industry
- Waste water plants
- Slaughter-houses



Technical Features

- High performance
- Dry self priming 9,5 m
- Integrated vacuum system
- modular system based on the IP range
- Long fibrous, abrasive or/ and high viscous media
- Ideal for medium with solids up to max. 60 mm
- Dry running
- Straight flow line, easy cleaning
- High discharge pressure
- Variable flow regulation

	Pump capacity [l/rev]	Inner hose diameter [mm]	Max. speed [rpm]	Drive output min/max [kW]	Pump Weight [kg]
XP 200 (1 1/2")	0,32	35	140	0,55 - 2,2	16
XP 400 (2 1/2")	2,67	63	60	1,5 - 7,5	51
XP 800 (4")	12,8	91	60	4,0 - 30	257

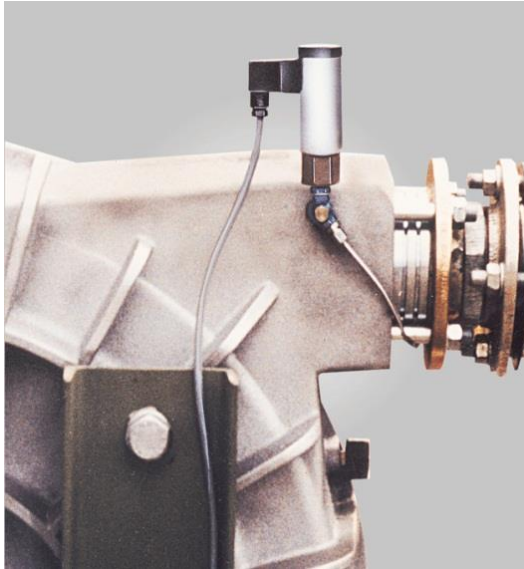
1 ELRO Peristaltic Pumps

2 ELRO Series IP

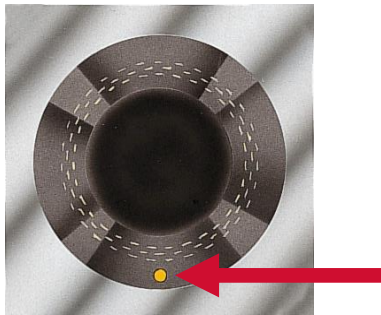
3 ELRO Series XP

4 **Accessories**

5 ELRO Applications



Hose in Hose -> Early-warning-System



Technical Features

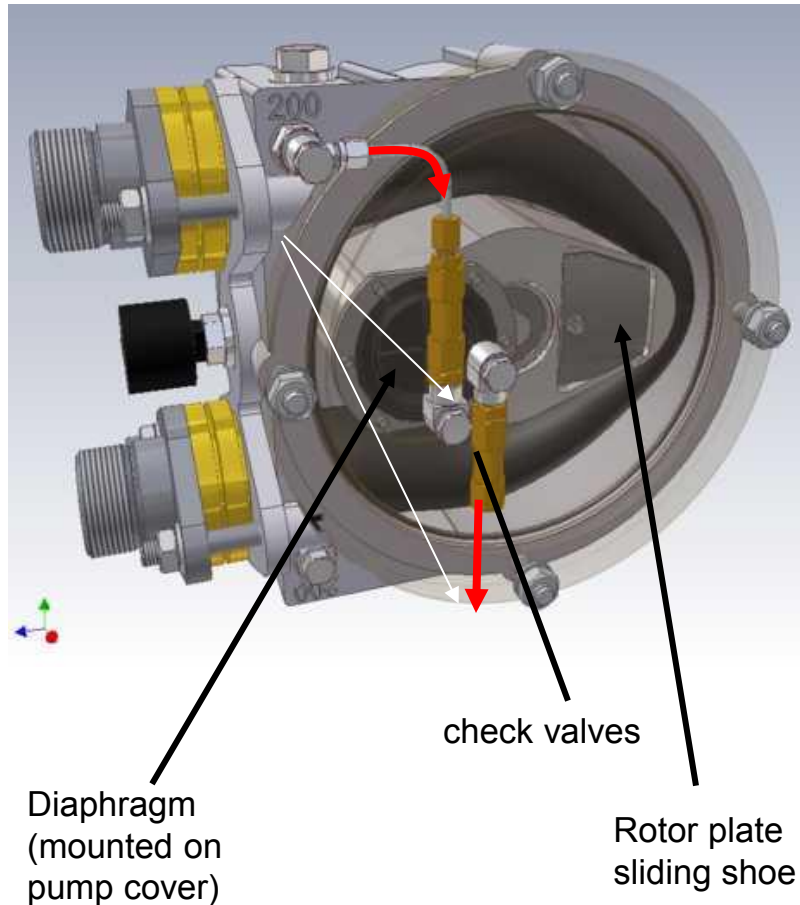
- Vacuum is generated by additional channel in the hose (hose in hose system)
- A vacuum of $\Delta P = 0,9$ bar can be achieved
 - Re-shapes the hose to its original shape
 - Remains constant flow rate over the hose lifetime
 - Can be controlled by a vacuum gauge
- Vacuum sensor signal can be used to stop the pump or give acoustical signal (trigger is $\Delta P = 0,3$ bar)

▶ Advantage: Downtimes through normal wear can be predicted

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Technical Features

- An additional diaphragm driven by the rotor establishes the vacuum
- A vacuum of $\Delta P = 0,9$ bar can be achieved
 - Re-shapes the hose to its original shape
 - Remains constant flow rate over the hose lifetime
 - Can be controlled by a vacuum gauge
- High capacity at high suction lifts and viscosities

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5 **ELRO Applications**



Description

Pump:

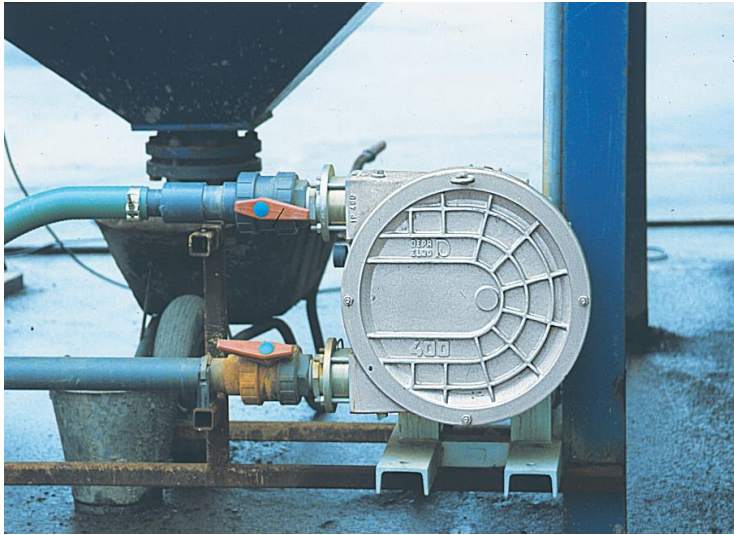
For this industry sector a XP400 pump heads with NBR peristaltic hose (max. 6 bar) can be used.

Application & Usage:

ELRO® XP400 pump heads are integrated in mobile carrying frames (pump unit) and are driven by a so called hydraulic power pack (mobile unit with diesel engine and hydraulic oil tank). These two mobile units (pump and drive) will be used for recovering of oil and oil emulsions (partially mixed with debris) in maritime beach areas due to environmental accidents.

All necessary suction equipment is included with the units, so that a complete system is given.





Description

Pump:

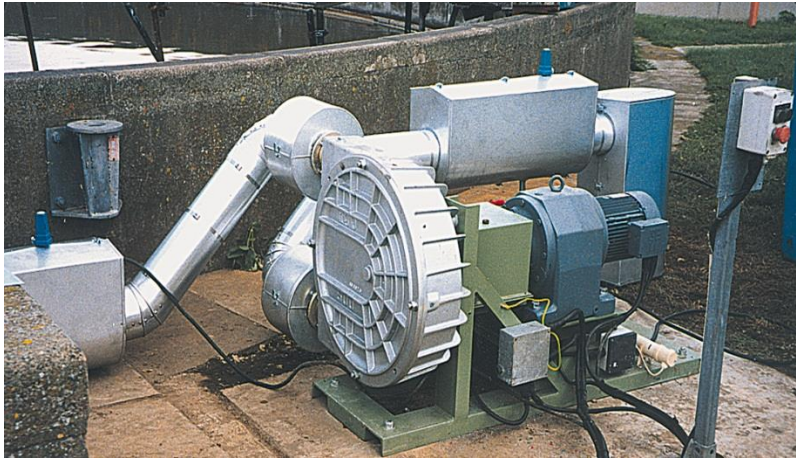
- IP/XP series of all sizes
- Equipped with stainless steel or non-metallic connections
- Chemical resistant peristaltic hose as CSM or EPDM
- Stainless steel or steel painted base frames
- Pump head with acid protection paint finish

Applications:

Handling of

- Acids and caustic solutions
- waste
- Diverse slurries
- Glues
- Paints & Coatings
- Additives
- Suspensions
- Detergents & Tensides
- Polymers
- Biochemical substances

Picture above and below show typical installations in chemical industries.



Description

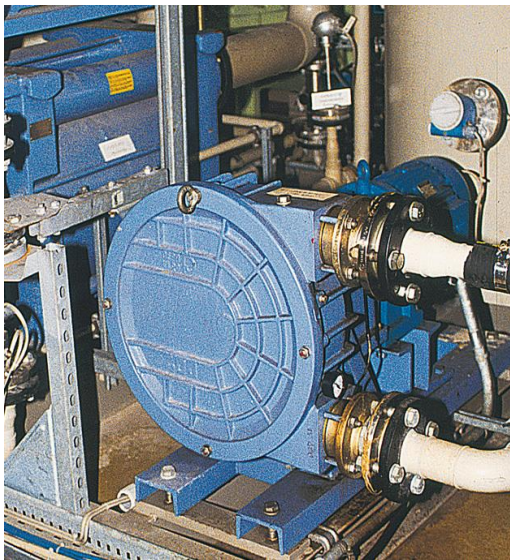
Pump:

For this industry sector different sizes 100-800 and IP/XP-range can be used depending on application in process.

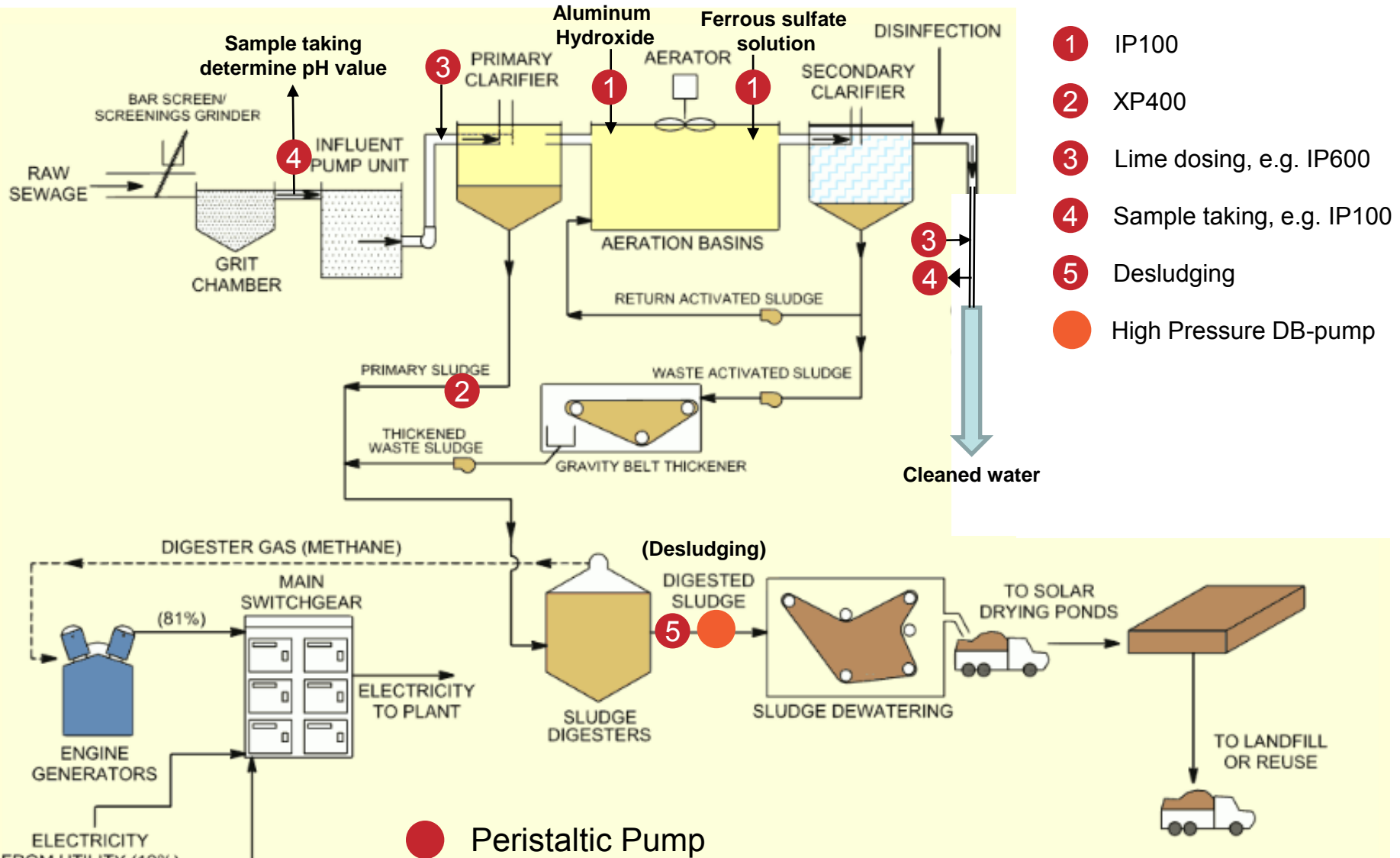
Application & Usage:

Pumps can be used as chemical dosing pumps accurately and repeatedly delivering a wide range of chemicals whilst addressing the problems of the liquids being pumped through the hose:

- E.g. Lime (limestone) is an abrasive medium, causing diaphragm pumps to clog due to its viscosity; progressive cavity pumps do suffer from abrasive wear
- Hypo off gases when pumped, can cause dosing pumps to vapor lock resulting in untreated liquid stream.
- Polymers are often shear sensitive and progressing cavity pumps reduce the particle size leading to increase chemical usage
- Sludge tends to have a high grit content creating high abrasive wear for rotary pumps which can suffer from ragging problems on primary sludge.



Typical plant layout & possible location of pumps



- 1 IP100
- 2 XP400
- 3 Lime dosing, e.g. IP600
- 4 Sample taking, e.g. IP100
- 5 Desludging
- High Pressure DB-pump

● Peristaltic Pump

● Add Pump

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REVISED MAY 2009



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