

# EVERYTHING FROM A SINGLE SOURCE – **sera** SOLUTIONS FROM A TO Z





The image shows a low-angle shot of a modern building's facade. The building has a mix of grey panels and large glass windows. On the right side, the 'sera' logo is mounted on the wall in large, white, three-dimensional letters. The sky is a clear, bright blue, and the sun is visible on the left, creating a lens flare effect. A semi-transparent blue rectangular box is overlaid on the lower right portion of the image, containing white text.

# sera

## An enterprise of the future

**sera** is one of the world's leading businesses in the field of dosing and compressor technology – for more than 75 years, the **sera** business group has been developing and producing solutions for applications that require precise dosing, feeding and compression of liquids and gases.

As an independent family business with its headquarters in Immenhausen, subsidiaries in the UK, Austria, Switzerland, South Africa and Spain and over 30 effective partners representing **sera** in more than 80 countries, we guarantee professional support, advice and services on the ground throughout the world.

# EXCELLENCE IN FLUID TECHNOLOGY

**WE CREATE ADDED VALUE FOR PEOPLE AND THE ENVIRONMENT.**

**sera** is an environmental technology business with a wide range of products which provide solutions for many applications all over the world: whether for water and wastewater treatment and disinfection, or for the precise dosing and conveying of chemicals and liquids.

Products for system monitoring and planning as well as customised solutions round off our portfolio. Our customers all over the world also benefit from our extensive range of services: From providing support in planning and commissioning systems, to quickly and easily replacing devices all over the world, through to developing innovative technologies.



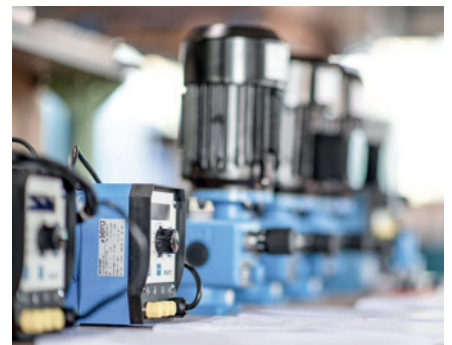
## **COMPREHENSIVE PRODUCT PORTFOLIO**

Whatever you require, we create customised solutions for your applications. This means that you can choose from a wide range of standard products and also configure customised systems completely according to your needs.



## **OUR CUSTOMERS ARE AT THE HEART OF EVERYTHING WE DO**

Our reliable and competent contacts will provide you with the best possible customer service and support throughout the entire offer, order and project realisation process. We always respond flexibly to your requirements and process and handle everything quickly and reliably. From engineering to production, through to after-sales service, we provide high-quality products and services.



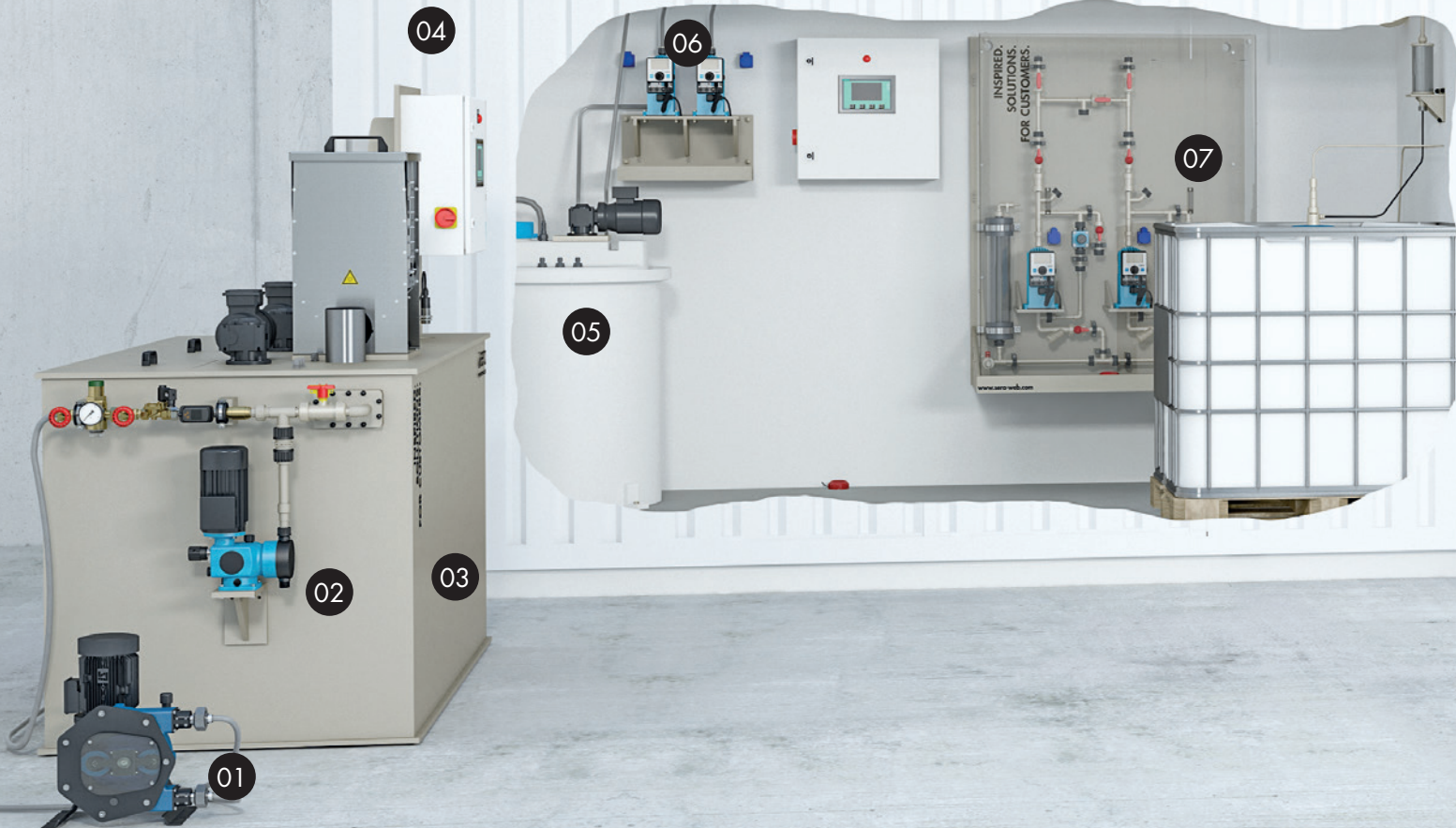
## **LONG-LASTING PRODUCTS AND HIGH QUALITY**

For more than 75 years, the name **sera** has stood for exceptional quality and know-how. We develop dosing pumps and systems for extreme operating conditions and long operating times. That's why the quality and reliability of our products always comes first. You can always rely on the expertise and experience of our team.





INSPIRED.  
SOLUTIONS.  
FOR CUSTOMERS.



## WE PROVIDE SOLUTIONS

### NOT JUST PRODUCTS

We aim to provide our customers with the best possible solution for your requirements. Our portfolio includes everything from fittings, dosing and feeding pumps to modular and customised dosing systems and complete container units. This means that we can support your specific requirements from the beginning to the end of the process chain with our products and solutions. **sera** offers a comprehensive product portfolio for every process step of your requirements.

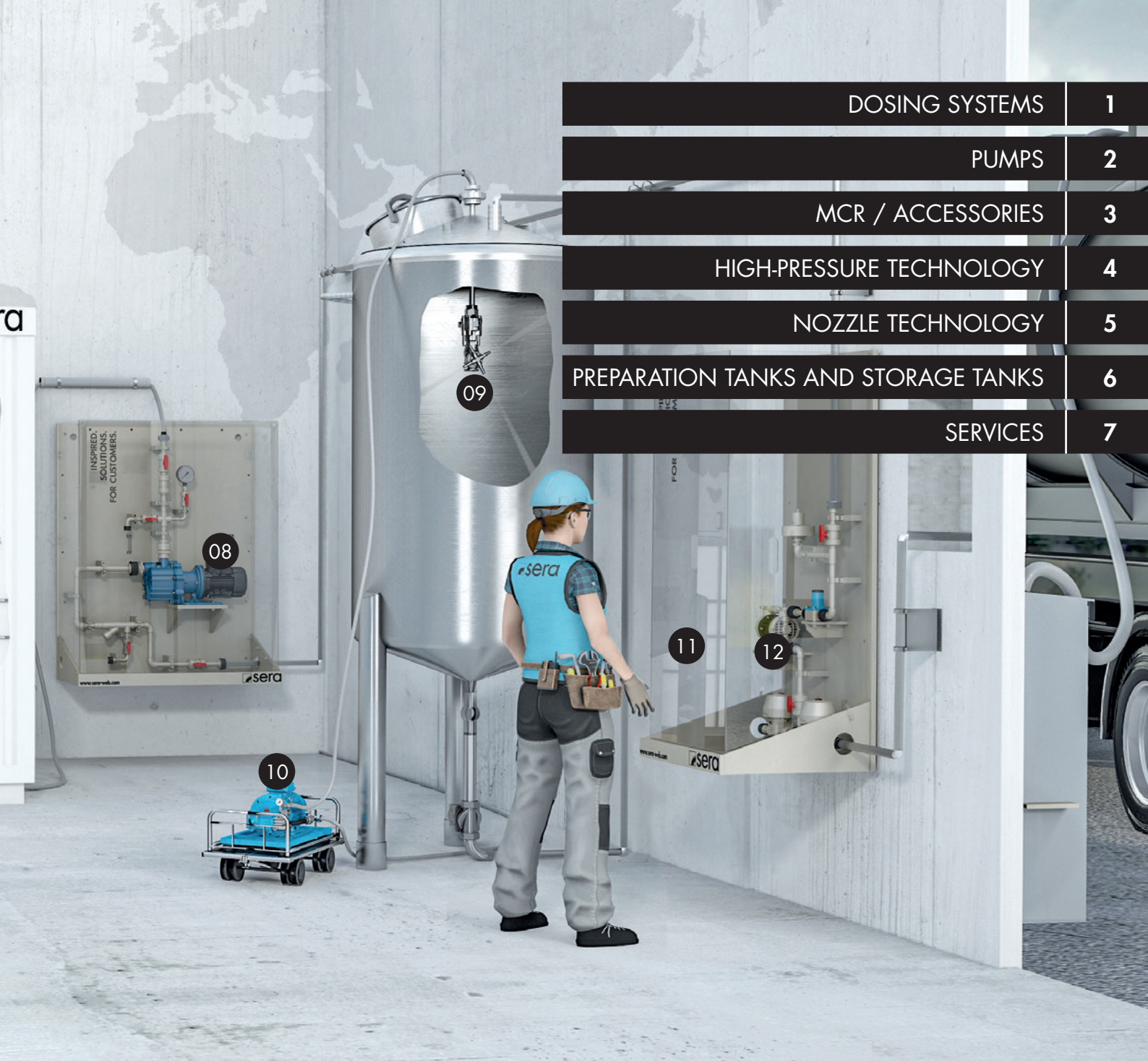
All **sera** products and solutions are based on comprehensive concepts that have been further developed over many years with proven standard components. Our modular systems offer a wide range of variants to optimally fulfil the respective required parameters.

These are complemented by products in the **sera** Excellence Partnership Program.

Modern control systems and connections safeguard the process and ensure consistently high quality. All machine series with both high-pressure technology and nozzle technology have extensive basic equipment that can be supplemented by various options depending on the application.

In addition, we offer comprehensive possibilities to find customised technical solutions for problems experienced by individual customers. Our engineering department works with you so that your requirements are implemented. The entire process chain is mapped, in turn providing you with a complete solution from a single source.





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**01 | HOSE PUMP**

For almost all media – and in continuous operation

**02 | DIAPHRAGM PUMP**

The allrounder pump

**03 | POLYLINE**

Preparation and dosing units for polymer solutions

**04 | DOSING SYSTEM**

Container solutions for every customer

**05 | CTD**

CTD dosing system  
Compact construction and design

**06 | STEPPER MOTOR PUMP**

For challenging dosing tasks

**07 | CVD**

CVD dosing system  
Vertical construction and design

**08 | CENTRIFUGAL PUMP**

Pump can be run dry

**09 | TANK WASHING HEAD**

High-quality spray nozzle heads and tank washing heads

**10 | HIGH-PRESSURE UNITS**

Stationary or mobile – suitable for continuous operation

**11 | DAV**

Customised dosing system

**12 | AIR OPERATED DIAPHRAGM PUMP**

Safely convey and transfer



# CUSTOMISED SOLUTIONS

## OUR EXPERTISE FOR YOUR SUCCESS

The requirements and dosing processes of our customers are extremely varied in the area of dosing and pump technology. Individual challenges must be identified and resolved.

As a system provider of dosing technology, **sera** is able to understand these different processes and develop tailor-made solutions to meet any customer requirements.

Particular attention is devoted to considering the interfaces: For which point in the customised process are our solutions intended and how can they be integrated smoothly?

Only when these essential questions have been answered can smooth project management be ensured for the customer.

**sera** is able to draw on a multitude of product solutions that it has developed itself to complete various dosing tasks, such as preparation and dosing stations with the associated dosing pumps and appropriate suction and pressure fittings.

A decision is made in each case about which components are actually required to complete the task and which are not. As a result, the dosing systems are adapted to the needs of the specific application.

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FOR CUSTOMERS.**





## STADTWERKE WINTERBERG

Winterberg, a centre of tourism in the Sauerland region with 13,000 residents across 15 districts, has experienced a development boom in recent years and – from the point of view of tourism – has all the features of a typical destination in the central German uplands.

In order to give winter sports enthusiasts 80 days of guaranteed snow a year, a plan was drawn up in the 1990s to make snow. The scheme worked: in 2012, Winterberg recorded more than 1 million overnight stays for the first time - and that was in commercial hotels alone. Unrecorded stays with small and private accommodation providers and about 1.5 million day visitors a year should be added to this. Of course, this has consequences for the local sewage system. Stadtwerke Winterberg AöR (Winterberg Public Utilities) operates two sewage treatment plants which struggle, especially in winter, with the sudden additional loads caused by the increase in tourism. The operator built on our expertise to overcome two particular challenges in this connection: The large number of day visitors has changed WC usage and the concentration of urea in the sewage has increased significantly. As a result, the amounts of carbon and nitrogen in the sewage are out of proportion. In normal public sewage, the ratio of carbon to nitrogen is 5:1, while in Winterberg it hovers around 2:1. This disproportionate ratio leads to a shortage of carbon in the denitrification period. Acetic acid is added to the sewage as a source of carbon to compensate for this. This supports the breakdown of nitrates into elemental nitrogen and the ratio of carbon to nitrogen is restored to the level required.

As a result of weeks of snow melting in Winterberg, the sewage also reaches very low temperatures, causing poor settling behaviour of the sewage sludge in the secondary clarification process. The addition of polymer flocculating agents improves the bonding and settling behaviour.

sera provided a solution for both challenges: the two sewage treatment plants were each supplied with a complete solution in an insulated hazardous material container with ventilation and heating. A DAV2 dosing system with spray protection doses the acetic acid from a 1,000 litre IBC into the denitrification system. Two iSTEP S50 stepper motor pumps with a very large adjustment range of 50 ml/h to 50 l/h, supported by a controller, ensure that very large quantities of acetic acid can be added if necessary, but it is also possible to add small quantities of acetic acid continuously in the denitrification process.

Both turn-key containers also have a smart CTD small quantity dosing system to prepare and dose polymer flocculating agents. The polymer is prepared from a concentrate and water, and is added to the feed for the secondary clarification system. The polymer is added automatically, depending on the turbidity in the secondary clarification system. Here, too, we used two iSTEP S50 pumps in order to offset fluctuations as effectively as possible. And this also facilitates easy maintenance and parts supply.

We are delighted that we were able to work with Stadtwerke Winterberg to develop and supply the right solution.





## PHNOM PENH – HEINEKEN BREWERY

Approximately 50 million tons of caustic soda are produced annually and used in various ways in industry. **sera** offers a cost-effective system solution specifically for use in the food industry, which has a variable but large demand for alkaline cleaning agents such as caustic soda. This enables the secure and efficient preparation of caustic soda based on sodium hydroxide (NaOH) in solid form (pellets, flakes, pearls or powder) and water.

Breweries use caustic soda particularly because it is cost-effective: transport, delivery and storage of goods in sacks with undissolved solids is significantly less expensive than ready-made solutions. The extensive building work which is required to accommodate delivery of ready-made solutions in tankers containing hazardous substances is also unnecessary. Above all, however, the well-known suppliers in the drinks industry value the flexibility that they have with their own preparation unit: Solutions are prepared as required and their concentration can be adjusted by increasing or lowering the amount of solid materials added.

These factors also played a part in the decision of Heineken, the operator of the Cambodia Brewery Ltd. in Phnom Penh – factors that go back to a caustic soda preparation unit in its renovation of the brewery in 2016.

The system supplied consists of a stainless steel batching tank, an agitator and a special conveyor that is separate from the batching tank. The conveyor consists of a feed hopper and a stainless steel screw-conveyor that carries the solid materials to the batching tank. With this design, the operating personnel are not in the immediate danger area of the batching tank in which the solid matter reacts exothermically with water.

The batching tank is equipped with a liquid level sensor with a shut-off valve, a temperature display and a pipe safety cage to prevent accidental physical contact. The prepared solution is transferred into a larger storage tank by a **sera**refilling system.

A **sera** CVD (Compact Vertical Dosing) system with a modular design is also provided to remove the solution from the storage tank and feed it precisely into the cleaning process.





## BONN - WASTE RECYCLING

Recycling of the waste from Bonn and the surrounding region is carried out by Müllverwertungsanlage Bonn GmbH (MVA), a subsidiary of Stadtwerke Bonn (Bonn Public Utilities). Over 1,000 tonnes of waste, which has to be disposed of in a safe and environmentally friendly way, is delivered to it every working day. In a complex thermal process, the waste is first incinerated and then processed. Flue gases are created when the refuse is burnt.

Their energy is recovered by means of a boiler or steam generator that is downstream from the incineration process. As the hot flue gases flow through the boiler, they are cooled down, while the boiler feed water is heated up and evaporated. The steam created is then used to generate electricity and heat. In the downstream condenser, the steam is liquefied again and returned to the feed water.

The feed and boiler water must meet certain requirements to ensure the boiler can be operated safely without causing damage.

**sera** designed and supplied a special dosing system for the boiler plant at MVA Bonn. Two independent dosing systems for caustic soda and ammonia solution have been installed in this plant, which condition the boiler water in such a way that it corresponds to the specifications of the VGB guidelines for power station operation. Both systems

have dosing pumps, fittings, 500 litre batching tanks, fill level sensors, collecting basins and space for delivery containers. As ammonia solution is a volatile chemical, this part of the system has a gas-tight design. A shared control cabinet monitors the two dosing systems and provides information to the control centre at MVA Bonn. Decentralised monitoring and control of the systems are therefore possible.

The application solutions are both made in a fully automated process with level monitoring from a mixture of concentrate and water. Dosing of the prepared solutions is carried out with controllable **sera** diaphragm and/or piston pumps. The demand on and adjustment of the pumping capacities depend on the operating mode of the higher level system parts.

**sera** dosing pumps ensure that there is a consistent pH value in the boiler feed water by adding caustic soda and that the condensate has a pH value of approx. 9.5 to protect the feed water and condensate pipes.

In this way, the boiler and pipes in the thermal section of the MVA have the optimal permanent corrosion protection.





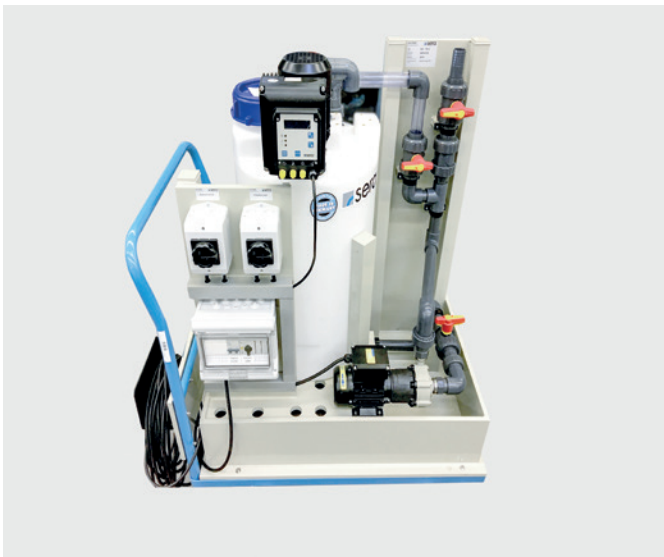
## EXAMPLES OF CUSTOMISED SOLUTIONS



### DEFOAMER DOSING

- Storage tank
- Dosing
- Measuring technology
- Electrical engineering

In terms of design, the individual parameters and our customer requirements are implemented by the **sera** Group's internationally networked engineering department, ensuring the customer receives a customised solution for their task – everything from a single source!



### PORTABLE MIXING AND DOSING STATION FOR THE CHEMICALS INDUSTRY

- Mobile platform truck with 100-litre dosing tank featuring agitator, fluid level gauge and other fittings
- Centrifugal pump for transferring chemicals during the customer process
- Collecting basin in case of leakage
- Control panel for on-site operation



### PRESSURE BOOSTING SYSTEM FOR ADBLUE IN THE AUTOMOTIVE INDUSTRY

- Dosing system for the automotive industry (urea)
- Two pumps of type MK/MF/MK410.2-1450e, each with three pump heads
- Max. delivery rate 4,350 l/h per pump and low pulsation
- Safe operation and easy service thanks to two electric diaphragm valves and the installed ball valves



## EXAMPLES OF CUSTOMISED SOLUTIONS



### DOSING CONTAINER FOR SODIUM PHOSPHATE

- Dosing container for saline ambient air with special coating
- Climate-control system to keep interior temperatures constant
- Dosing unit for sodium phosphate with multi-layer diaphragm pumps



### PREPARATION AND DOSING UNITS FOR POLYMER SOLUTIONS IN THE CLOSED CONTAINER

- Weather-protected and heat-insulated container including heating system, lighting and ventilation
- Container features built-in 3-chamber polymer continuous flow systems (type: PolyLine Flow 2000 S)
- Dry material feeder with small-parts conveyor device and 200-litre storage tank for polymer dry materials
- Two eccentric screw pumps with frequency converters to remove polymer solution when ready for production
- Entire unit features central control cabinet (SPS technology) including customised programming



### DOSING OF SULPHURIC ACID

- Dosing systems with innovative stepper motor pumps and flow measurement for maximum precision
- System piping made of stainless steel with stand-by construction and design
- Maximum safety thanks to spray guard, intelligent diaphragm monitoring and operating condition notifications



## EXAMPLES OF CUSTOMISED SOLUTIONS



### DOSING OF SODIUM PHOSPHATE AT POWER PLANTS

- All-in-one dosing station on a gridiron with collecting basin
- Two high-pressure pumps with multilayer diaphragm technology ensure optimum dosing precision
- Stainless steel preparing tank and control cabinet for automatic operation of the systems



### CONTAINER FOR DOSING AMMONIA SOLUTIONS AT POWER PLANTS

- Two completely assembled dosing systems with collecting basins in one container with double doors
- Location can be determined by the client; easy to retrofit
- Two complete dosing stations each with two dosing pumps and one preparation pump to ensure optimum availability of chemicals



## EXAMPLES OF CUSTOMISED SOLUTIONS



### ROBUST UNITS FOR EXTREME ENVIRONMENTAL CONDITIONS

- Single-layer diaphragm pumps with stainless steel heads and a capacity of 1,450 l/h in a stand-by design
- Stainless steel frame construction for floor installation with drip tray and piping made of stainless steel
- Pressure manometer and stainless steel pulsation damper for ideal operation



### DOSING SYSTEM IN THE PROTECTIVE CABINET

#### Sample application

Dosing of external carbon sources such as methanol, ethanol, acetic acid and glycol

#### Design

The completely modular design of our dosing systems facilitates simple adaptation to individual dosing requirements.

The system is designed in accordance with the ATEX directive, as required for handling flammable liquids such as methanol.

#### Features

- Compact, space-saving design
- Pump type and size to meet requirements
- Piping systems made of PVC-U, PP, PVDF or stainless steel
- Assembly panel with collecting basin and drain
- Assembly panel - with base frame as an option
- Leakage sensor with building regulation approval

## EXAMPLES OF CUSTOMISED SOLUTIONS



### STAINLESS STEEL DOSING SYSTEMS

When mixing caustic soda from solids, an exothermic reaction with temperatures of up to 95 °C occurs. The **sera** CausticPrep is designed so that the user can easily feed the caustic soda flakes into the process from a safe distance.

#### Sample application

Preparation of caustic soda from pellets and flakes.

#### Design

The stainless steel hopper is filled with solids by means of a screw conveyor; these solids are fed into a feed hopper by the operator. The safety of the user is ensured by the distance to the hot tank.

#### Available sizes

- 1 m<sup>3</sup> batching tank
- 2 m<sup>3</sup> batching tank
- 3 m<sup>3</sup> batching tank
- 5 m<sup>3</sup> batching tank

#### Features

- Medium-affected parts are made of stainless steel
- Debagging with screw conveyor approx. 1000 kg/h
- Level indicator with shut-off valve
- Electric agitator
- Temperature display
- Overflow pipe with siphon
- Manual addition of water
- Tubular safety guard
- Debagging station is kept away from the hot areas

#### Accessories

- Suction device
- Transfer and refill station
- Storage tank
- Dosing station



## EXAMPLES OF CUSTOMISED SOLUTIONS



### DISSOLVING AND DOSING SOLIDS

#### Sample application

Preparing and dosing solids, for example  $\text{CaCl}_2$  or  $\text{CaSO}_4$

#### Design of batching tank

- Manual preparation of bagged chemicals
- Manual addition of water
- PP tank with tapered bottom for draining
- Feed chutes for bagged chemicals
- Electric agitator
- Capacitance liquid level sensor, adjustable
- All components are suspension-suitable and heat-resistant

#### Design of storage tank

- Manual addition of water for rinsing
- PP tank with tapered bottom for draining
- Electric agitator
- Capacitance liquid level sensor, adjustable
- All components are suspension-suitable and heat-resistant



### STORAGE TANKS AND DOSING FROM A SINGLE SOURCE

Whenever larger quantities of chemicals are processed, they are usually stored centrally in storage tanks in concentrate rooms. The **sera** dosing systems ensure safe and problem-free removal, and also precise dosing of the chemical over long piping distances.

#### Sample application

Removal of acids, lyes and disinfectants, e.g. in large breweries and dairies.

#### Design

Removal from the storage tanks (may be up to 5 m high) takes place exclusively from above due to the design (tank in collecting tray). This is why a siphon vessel is always installed on the tanks at the highest point, and **sera** dosing systems are equipped with a priming aid.

#### Features

- Siphon vessel on the tank
- Priming aid
- pulsation damper
- Flow measurement

# CVD DOSING SYSTEM

## VERTICAL CONSTRUCTION AND DESIGN

OPERATING RANGE for CVD1(s) up to max. 10 bar / 1500 l/h

OPERATING RANGE for CVD2 up to max. 10 bar / 2x1500 l/h

Compact **V**ertical **D**osing (CVD) is just one name. Behind this is the largest modular system for dosing applications. **sera** is the only manufacturer to offer the right drive technology in a configurable modular system for every application. With a magnetic drive, multiphase motor or three-phase motor, coupled with the appropriate communication option (manual, conventional such as 4-20 mA or impulse, PROFIBUS or PROFINET), you will always find the right solution for a wide range of tasks. By selecting the displacer as single-layer diaphragm, multi-layer diaphragm or piston diaphragm technology, you are selecting the perfect implementation of safety requirements. With further well thought-out options, almost 90% of applications are covered. If further development is needed due to specific requirements, we adapt our solutions individually according to customer requirements.



### ADVANTAGES AT A GLANCE

- State-of-the-art pump technology
- Standardised mounting plates
- Space-saving wall mount
- Wide range of applications
- High standard of safety
- Large output range
- Ease of use
- Low maintenance
- Complete range of accessories

### SAMPLE APPLICATIONS

- Drinks industry
- Food industry
- Dye and paint manufacturing
- Power station technology
- Water treatment
- Shipbuilding
- Electroplating
- Textile industry
- Wastewater treatment

For more information, see operating manual:

- [CVD dosing system](#)



## VERSIONS

CVD1

CVD1s

CVD2

CVD1s



CVD1



CVD2 STAND-BY-INSTALLATION



CVD2 2 x 100 % - INSTALLATION



### BASIC DESIGN

- Piping of the pressure-side
- Ball valves (drain/shut-off)
- Check valve
- Diaphragm relief valve
- Dosing pump
- Wall mount panel with collecting basin and drainage supports

### OPTIONS

- Terminal box
- Main switch
- Diaphragm pulsation dampener
- Socket per pump
- Multifunctional container
- Leakage sensors

- Frame for floor assembly
- Protective cabinet with heating and/or lighting
- Removable spray protection
- Suction-side piping with ball valve and line strainers / piping from the relief valve back into the suction line (for each pump)
- Pressure-side connecting line (CVD2 stand-by installation)
- Protective shield for the driving motor
- Dosing hose

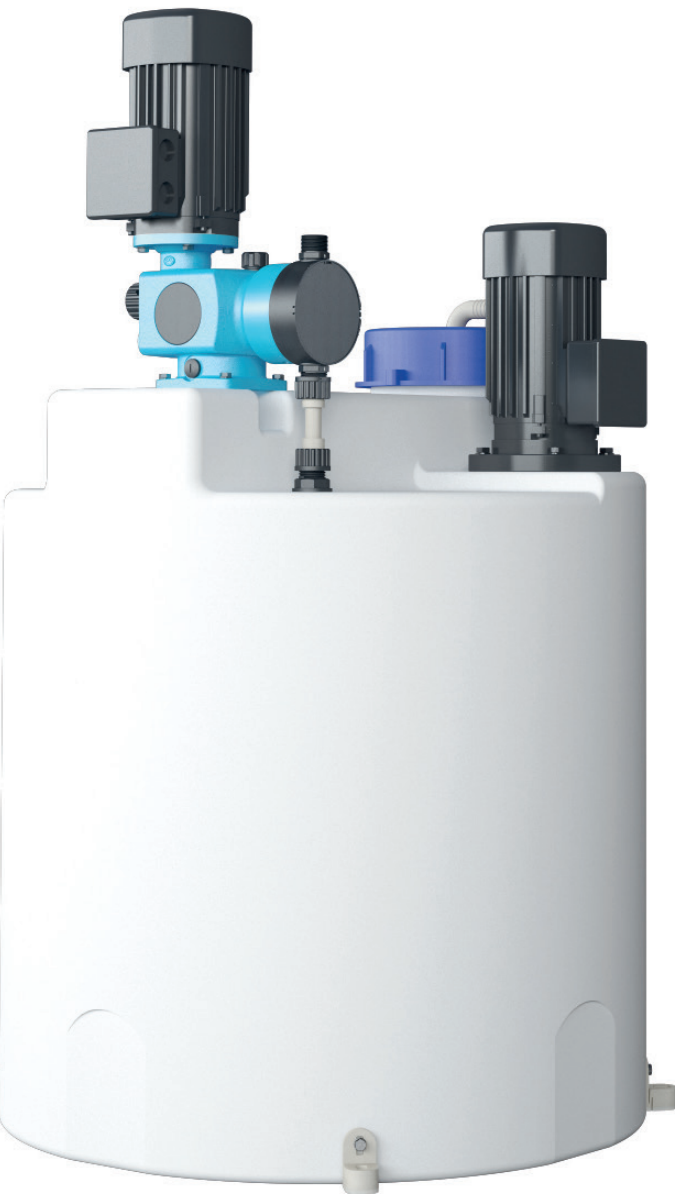
# CTD DOSING SYSTEM

## COMPACT CONSTRUCTION AND DESIGN

**OPERATING RANGE** up to max. 10 bar / 570 l/h

The complete series has a completely modular design and is equipped with standardised components. This means that the systems can be individually assembled ready for connection for the respective application, as if from a construction kit, and can be delivered in a significantly shorter time. Three **sera** pump series can be combined with seven different tank sizes, so there is a wide range of configurations to choose from.

The options range from small 40-litre tanks each with a simple magnetic diaphragm pump to 1,000-litre tanks each with an electrically controllable diaphragm pump, electric agitator and extensive safety package.



### ADVANTAGES AT A GLANCE

- Standardised tank sizes
- Space-saving design
- Wide range of applications
- High standard of safety
- High-grade materials
- Ease of use
- Low maintenance
- Complete range of accessories

### SAMPLE APPLICATIONS

- Drinking water treatment
- Wastewater treatment
- Industrial water treatment
- Cooling water treatment
- Boiler water treatment
- Sludge dewatering
- Cleaning and degreasing
- Surface treatment
- Textile industry
- Exhaust air cleaning
- CIP applications

For more information, see operating manual:

- [CTD dosing system](#)



CTD

## VERSIONS



### BASIC DESIGN

- Dosing tank with litre scale and cover (DIN162)
- Suction lance with foot valve and sieve
- Ventilation duct with hose nozzle
- Angle bracket for floor assembly

### OPTIONS

- spray protection
- Multi-functional valve with return pipe into the tank
- Manual agitator or electric agitator
- Integrated relief valve at pump with return pipe into the tank
- Protective shield for the driving motor of the pump
- Collecting basin
- Gas-tight design: chemical steam lock, ventilation system connection
- Level indicator for black tank
- Technical dosing equipment
- CONTROL SYSTEM
- Drain fitting
- Filling fitting
- Tank screw connection
- Cabling
- Magnetic float switch: full signal, dry-running protection, pre-alarm
- Dissolving basket
- Lock for screw cap

## PREPARATION SYSTEM FOR POLYMERS

### OPERATING RANGE up to max. 8000 l/h

Polymer solutions are used everywhere where sedimentation or flotation of suspended solids in water is to be accelerated and the dewatering behaviour of thickened sludge improved, such as in wastewater treatment, paper manufacture, drinking water treatment, and sewage sludge dewatering.

PolyLine from **sera** is a series of simple and flexible, economical and powerful systems for preparing polymers. The series covers preparation systems that can be used with dry or liquid polymers. The systems are equipped with precise flow measurement for solution preparation and filling level measurement, to ensure the efficient and economical operation of the systems.



### ADVANTAGES AT A GLANCE

- Client and application-specific, modular polymer preparation systems
- High-grade PP tanks
- Versatile use with powdered polymers, liquid polymers, or powdery/liquid composite polymers
- High process efficiency due to a virtually complete solution of newly prepared polymer
- The solution concentration is accurately adhered to, as the dry material feeder and the liquid concentrate pump can be calibrated in a reproducible manner
- Low-maintenance filling level measurement due to a continuous, contactless ultrasound sensor
- Very easy to use thanks to its compact PLC and built-in process visualisation and touchscreen
- Modular design based on an intelligent modular system
- Can be optionally customised and expanded with products from the **sera** range

### SAMPLE APPLICATIONS

- Sludge dewatering / conditioning
- Wastewater treatment
- Paper manufacturing
- Drinking water treatment
- Chemical industry
- Process water treatment
- Power stations
- Shipbuilding

For more information, see operating manuals:

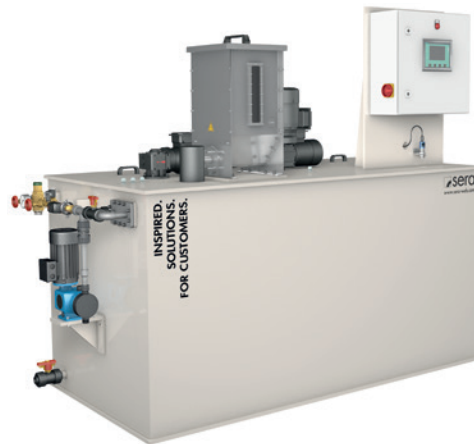
- [PolyLine Flow dosing system](#)
- [PolyLine Swing dosing system](#)
- [PolyLine Double dosing system](#)



## SYSTEM CONCEPTS

POLYLINE

FLOW



In the 3-chamber system, the polymer is dissolved with water in the first chamber. The product matures in the second chamber. The finished solution reaches the third chamber via the overflow, where removal takes place. Product entrainment is minimised by a process that is optimally tailored to the task.

POLYLINE

SWING



The pendulum system tank consists of two separate chambers. The polymer solution is prepared successively in the chambers. After a defined maturing time, the polymer solution is available for extraction. Product entrainment is excluded.

POLYLINE

DOUBLE



In the double-deck variant, the chambers are arranged one on top of the other. The polymer is prepared in the upper chamber. After the maturing time is complete, the fully matured product is drained into the lower chamber. Product entrainment is prevented through the process.

# MODEL DEFINITIONS

## POLYLINE ... S

**S = SOLID**

For use with powdered polymers

### POLYLINE FLOW S



### POLYLINE SWING S



### POLYLINE DOUBLE S



## POLYLINE ... L

**L = LIQUID**

For use with liquid polymers

### POLYLINE FLOW L



### POLYLINE SWING L



### POLYLINE DOUBLE L



## POLYLINE ... SL

**SL = SOLID/LIQUID**

For use with powdery and/or liquid polymers

### POLYLINE FLOW SL



### POLYLINE SWING SL



### POLYLINE DOUBLE SL





## VERSIONS

POLYLINE

FLOW



POLYLINE

SWING



POLYLINE

DOUBLE



### BASIC DESIGN

- Tank
- PLC control system
- Dosing pump (L, SL)
- Dry material feeder (S, SL)
- Induction device
- Electric agitator(s)
- Level monitoring
- Solution water device

### OPTIONS

- Third agitator for PolyLine Flow
- Indicator for when the hopper is empty (S, SL)
- Hopper design (S, SL)
- Hopper design and hopper full signal (S, SL)
- Vibrator (S, SL)
- Small-parts conveyor device (S, SL)
- Overflow
- Overflow protection
- Control panel
- Signal exchange package
- BUS connection
- Special voltages

### ACCESSORIES

- Post-dilution station

# PUMP OVERVIEW

## DIAPHRAGM PUMP

Max. 1710 l/h, max. 10 bar

### FEATURES

- High operational reliability
- Fully leakage-free
- Can be run dry
- Self-priming
- Cost-effective
- CIP design
- ATEX design

### CONTROLS

- Manual, frequency converter, actuator
- Control electronics (impulse, analogue, external)
- PPROFIBUS
- PROFINET (409.2)

### SERIES 409.2 e



### SERIES 410.2 e



### MULTI-HEAD PUMP 409.2 e / 410.2 e

- Max. 5 heads up to 7500 l/h

## MULTI-LAYER DIAPHRAGM PUMP

Max. 1440 l/h, max. 20 bar

### FEATURES

- Very high operational reliability
- Diaphragm service life up to 10,000 h
- Diaphragm monitoring
- up to 100 °C (media temp.)
- ATEX design

### CONTROLS

- Manual, frequency converter, actuator
- Control electronics (impulse, analogue, external)
- PPROFIBUS
- PROFINET (409.2)

### SERIES 409.2 ML



### SERIES 410.2 ML



### MULTI-HEAD PUMP 409.2 ML / 410.2 ML

- Max. 5 heads up to 6000 l/h

## PISTON DIAPHRAGM PUMP

Max. 1020 l/h, max. 80 bar

### FEATURES

- Very high operational reliability
- Diaphragm service life up to 10,000 h
- Diaphragm monitoring
- Overpressure protection
- ATEX design

### CONTROLS

- Manual, frequency converter, actuator
- Control electronics (409.2) (impulse, analogue, external)
- PPROFIBUS
- PROFINET (409.2)

### SERIES 409.2 KM

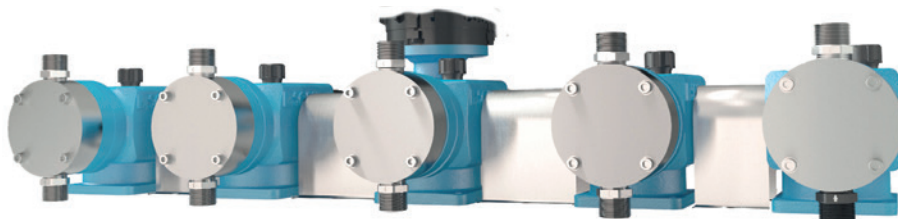


### SERIES 410.2 KM



### MULTI- HEAD PUMP 409.2 KM / 410.2 KM

- Max. 5 heads up to 4000 l/h





## PISTON PUMP

Max. 22 l/h, max. 140 bar

### FEATURES

- Cost-effective high-pressure pump
- Very high metering accuracy
- Operational reliability thanks to leakage nozzles

### CONTROLS

- Manual, frequency converter, actuator
- Control electronics (impulse, analogue, external)
- PPROFIBUS
- PROFINET

### SERIES 409.2 e



## AIR OPERATED DIAPHRAGM PUMP

Max. 800 l/min, max. 8 bar

### FEATURES

- Low maintenance
- Protected from overpressure and can be run dry

### CONTROLS

- Via compressed air

### airPUMP SERIES



## SOLENOID DIAPHRAGM PUMP

Max. 35 l/h, max. 10 bar

### FEATURES

- Ease of use
- Many standard functions
- Compact and economical
- High-quality design

### CONTROLS

- Manual, pulse, analogue

### SERIES 204.1



## FEEDING PUMP

MAX. 3100 L/H, MAX. 4 BAR

### FEATURES

- Low maintenance
- Up to 8 mWS
- easy to handle
- Low-maintenance transfer pump
- Leakage-free
- Can be run dry indefinitely
- Self-priming

### CONTROLS

- Manual
- Frequency converter

### SERIES 411.3



## STEPPER MOTOR PUMP

Max. 50 l/h, max. 10 bar

### FEATURES

- Adjustment range 1:1000
- Batch dosing with recipe pre-selection
- Week/day timer
- Diaphragm monitoring
- Maintenance service display
- Intuitive and easy to operate

### CONTROLS

- Manual, control electronics (impulse, analogue, external)
- PPROFIBUS
- PROFINET

### SERIES iSTEP XS



### SERIES iSTEP S



# PUMP OVERVIEW

## MAGNETICALLY COUPLED CENTRIFUGAL PUMP

Max. 50 m<sup>3</sup>/h

### FEATURES

- Block construction and design
- Block or process construction and design (UC series)
- NdFeBd\* magnets in every model
- Replaceable shaft bearing
- Balancing in accordance with ISO 1940 G2.5
- IEC and NEMA motors adaptable
- Easy set drive solenoid
- Attachment on the motor without disassembly
- Back pull-out design
- CE certified
- DB and UC series available in accordance with ATEX 2014/34/EU

### SERIES DB



### SERIES SP



## HOSE PUMP

Max. 13000 l/h, max. 10 bar

### FEATURES

- Maximum abrasion resistance
- Unrivalled suction capacity
- Can be run dry indefinitely
- No valves or slide ring seals
- Gentle conveying
- Pumps in both directions possible
- Full dosing control system
- Industrial, chemical-resistant and food-compatible designs
- Dosing accuracy of +/-1 %





## DRUM & CONTAINER PUMP

Max. 150 l/min

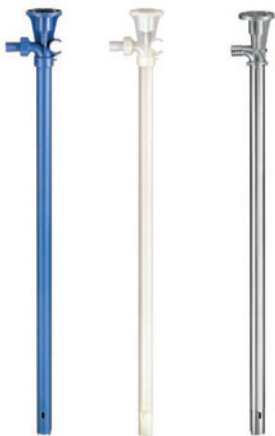
### SERIES PF

- Sealless high-performance pumps
- High flow rate at high head
- Stainless steel pumps are available in accordance with ATEX 2014/34/EU



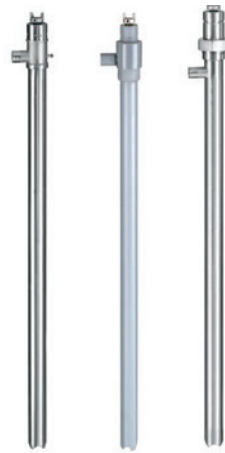
### SERIES EF

- Sealless universal pumps
- Cost-effective
- Ideal replacement for hand pumps
- Stainless steel pumps are available in accordance with ATEX 2014/34/EU



### SERIES TT

- Pumps for medium viscosities/flow rates
- Equipped with PTFE screw spindle impeller
- Ideal for liquids with small particles or solvents
- STTS models are made of FDA-compliant materials.



### SERIES TB

- Pumps with mechanical valve seals
- For low to medium viscosity mild chemicals, and also solvents
- Suitable for smaller tap openings



### SERIES BT, HVDP

- Pumps for high viscosity/high head
- Fitted with PTFE screw spindle impeller
- For media up to 15,000 cP
- HVDP series – mechanically sealed pump with eccentric screw for media with high viscosity up to 20,000 cP
- Versions with FDA-compliant materials available



### SERIES TM

- For media with low to medium viscosity
- Drum mixer with 4-blade turbine
- deal for mixing media or preventing solids from settling in the drum



# MODULAR SYSTEM OVERVIEW

PUMP ...409.2

iSTEP STEPPER MOTOR PUMP

CONTROL SYSTEM



01



02



05



03

HOUSING



07

DISPLACER



16

STROKE ADJUSTMENT



13

HOUSING

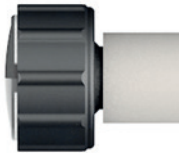


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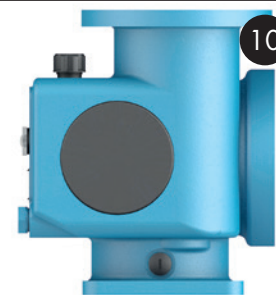
iSTEP STEPPER MOTOR PUMP



08



14

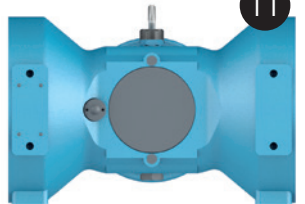


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PUMP 409.2  
PUMP 410.2



15



11

## CONTROL SYSTEM

- 01 | Pro+ control system
- 02 | Interface modules  
PROFINET / PROFIBUS for Pro+ control system
- 03 | Motor DSM / WSM
- 04 | Motor DSM with frequency converter
- 05 | Control system (not for 410.2 KM)  
Optionally available with PROFIBUS
- 06 | R control system



MAGNETIC DRIVE PUMP ...204.1

PUMP ...410.2

FEEDING PUMP ZX... 411.3



04



05



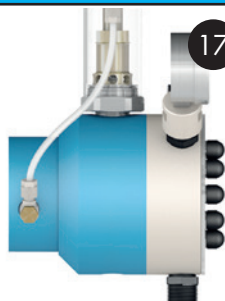
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06

CONTROL SYSTEM

DISPLACER



17



18



16

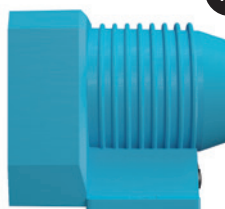


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PUMP 409.2  
PUMP 410.2

ZX... 411.3

HOUSING



12

DISPLACER



16

...204.1



HOUSING TYP

- 07 | iSTEP S
- 08 | iSTEP XS
- 09 | 409.2
- 10 | 410.2
- 11 | ZX...411.3
- 12 | 204.1

STROKE ADJUSTMENT

- 13 | Manuel with simple scale
- 14 | Manuel with position indicator
- 15 | Electrical with actuator

DISPLACER TYPE

- 16 | Single-layer diaphragm pump
- 17 | Piston diaphragm pump
- 18 | Multi-layer diaphragm pump
- 19 | Piston pump

# SOLENOID DIAPHRAGM PUMP

## FOR SIMPLE DOSING TASKS

OPERATING RANGE up to max. 10 bar / 35 l/h

Solenoid diaphragm pumps in the 204.1 series are electronically controlled, versatile dosing pumps for maximum operational reliability in a robust industrial design. Output range of 0.4 l/h up to 35 l/h at pressures up to 10 bar.



### ADVANTAGES AT A GLANCE

- Directly controllable
- PROFIBUS DP – interface
- High dosing accuracy
- Long diaphragm service life
- High-grade materials
- Linear control characteristics
- Low-maintenance
- Low operating costs
- Leakage-free
- Can be run dry indefinitely
- Easy to use
- Low weight
- Self-venting pump series

### SAMPLE APPLICATIONS

For exact, process-dependent dosing of slightly outgassing media in all areas of industry.

For more information, see operating manuals:

- [Safety instructions](#)
- [Solenoid diaphragm pumps](#)
- [C control system](#)
- [R control system](#)
- [PROFIBUS](#)



# SOLENOID DIAPHRAGM PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

### PUMP BODIES AND VALVES

PVC-U, PP-FRP, PVDF-FRP, 1.4571

### VALVE BALLS

PTFE, 1.4401, Al<sub>2</sub>O<sub>3</sub>

### VALVES SEALS

EPDM, FPM, FEP-coated, FFKM

### WORKING DIAPHRAGM

PTFE-laminated

### MANUEL VENT VALVE

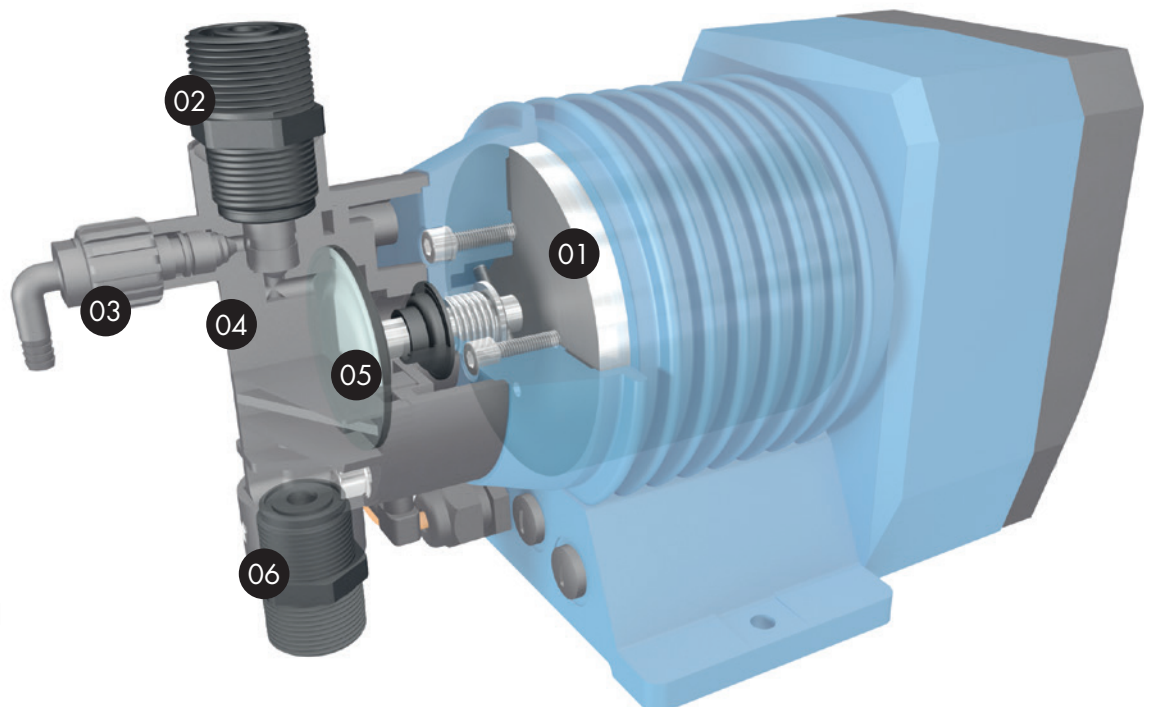
PP-FRP, PVDF-FRP

### DRIVE

The drive unit of the **sera** solenoid diaphragm pumps consists of a powerful lifting magnet in a strong plastic housing. The non-turning lifting magnet is equipped with a thermal overload protection device.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, flow meters, control cables, etc.



- 01 | Drive solenoid
- 02 | Pressure valve
- 03 | Vent valve  
(PP-, PVDF-FRP)
- 04 | Pump body
- 05 | Diaphragm
- 06 | Suction valve

# iSTEP XS STEPPER MOTOR PUMP

## FOR CHALLENGING DOSING TASKS

### OPERATING RANGE up to max. 10 bar / 15 l/h

The new **sera** iSTEP XS stepper motor pump combines an intelligent drive concept with the accuracy of a diaphragm dosing pump and sets new standards in terms of reproducibility and reliability. Thanks to the variable frequency control and an output range of 0.02..15 l/h at max. 10 bar, the possible applications are almost unlimited. It is intuitive to use, durable and particularly suited to demanding dosing tasks.



### ADVANTAGES AT A GLANCE

- Extremely large output range with just one pump
- Adjustment range 1:1000, can therefore be adjusted optimally
- Low-pulsation dosing
- Microprocessor-controlled drive
- Remote design
- Energy-efficient drive technology
- Batch dosing and recipe storage
- Intuitive menu control including configuration
- Pulse scaling
- Day/timer function with 10 storage slots
- Low chemical consumption thanks to high dosing accuracy
- Slow mode operation for viscous substances

### SAMPLE APPLICATIONS

- Chlorine dosing for drinking water treatment
- Flocculating agent dosing in wastewater treatment
- Dosing of flocculant aids
- CIP applications

### INPUTS & OUTPUTS

- 3 inputs programmable as
  - 3 x digital inputs
  - 2 x analogue inputs 0/4...20 mA
- 2 digital outputs
- 1 analogue output for 0/4...20 mA signal
- All inputs and outputs are freely configurable

For more information, see operating manuals:

- [Safety instructions](#)
- [iSTEP stepper motor pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)

## iSTEP XS

## VERSIONS

## MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

## PUMP BODIES AND VALVES

PVC-U, PP-FRP, PVDF-FRP, 1.4571

## VALVE BALLS

PTFE, 1.4401

## VALVE SEALS

EPDM, FPM, FEP-coated

## WORKING DIAPHRAGM

PTFE-laminated

## DRIVE

The drive unit of the iSTEP consists of a multiphase motor, coupled to a precise eccentric drive in a strong plastic housing. **sera** housings and base rings cope with any requirements and can, for example, withstand chemical attack due to the material they are made from.

## CONTROL

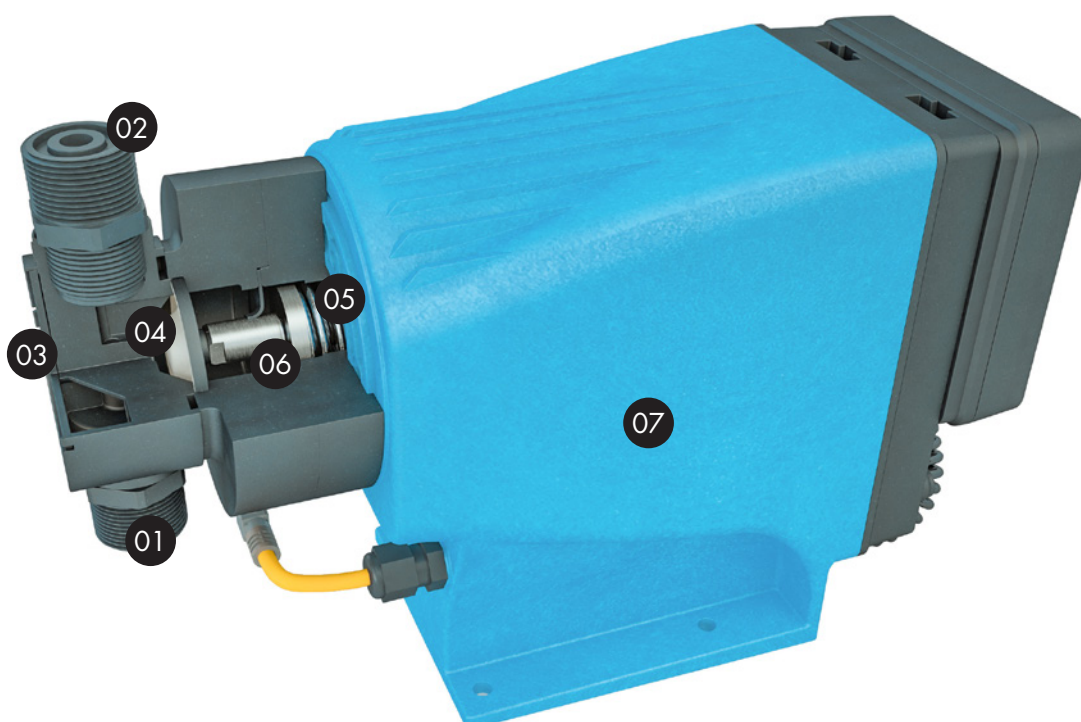
The flow rate of the **sera** stepper motor pumps can be controlled continuously by hand or by means of signals. An adjustment range of 1:1000 can be covered in this way. The stroke speed is used as the control mechanism.

## SPECIAL DESIGNS

We offer individual solutions for special dosing tasks, including integration into a PROFIBUS/PROFINET network with the INTERFACE MODULE.

## ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, suction lances, etc.



- 01 | Suction valve
- 02 | Pressure valve
- 03 | Pump body
- 04 | Diaphragm
- 05 | Pressure spring
- 06 | Connection rod
- 07 | Housing



# iSTEP S STEPPER MOTOR PUMP

## FOR CHALLENGING DOSING TASKS

OPERATING RANGE up to max. 10 bar / 50 l/h

The **sera** iSTEP stepper motor pump combines an intelligent drive concept with the accuracy of a diaphragm dosing pump and sets new standards in terms of reproducibility and reliability. Thanks to the variable frequency control and an output range of 0.02...50 l/h at 10..3 bar, the possible applications are almost unlimited. It is intuitive to use, durable and particularly suited to demanding dosing tasks.



### ADVANTAGES AT A GLANCE

- Extremely large output range with just one pump
- Adjustment range 1:1000, can therefore be adjusted optimally
- Low-pulsation dosing
- Microprocessor-controlled drive
- Remote design
- Energy-efficient drive technology
- Batch dosing and recipe storage
- Intuitive menu control including configuration
- Pulse scaling
- Day/timer function with 10 storage slots
- Low chemical consumption thanks to high dosing accuracy
- Slow mode operation for viscous substances

### SAMPLE APPLICATIONS

- Chlorine dosing for drinking water treatment
- Flocculating agent dosing in wastewater treatment
- Dosing of flocculant aids
- CIP applications

### INPUTS & OUTPUTS

- 3 inputs programmable as
  - 3 x digital inputs
  - 2 x analogue inputs 0/4...20 mA
- 2 digital outputs
- 1 analogue output for 0/4...20 mA signal
- All inputs and outputs are freely configurable

For more information, see operating manuals:

- [Safety instructions](#)
- [iSTEP stepper motor pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)

## iSTEP S

## VERSIONS

## MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

## PUMP BODIES AND VALVES

PVC-U, PP-FRP, PVDF-FRP, 1.4571, 1.4435

## VALVE BALLS

PTFE, 1.4401

## VALVE SEALS

EPDM, FPM, FEP-coated

## WORKING DIAPHRAGM

PTFE-laminated

## DRIVE

The drive unit of the iSTEP consists of a multiphase motor, coupled to a precise eccentric drive in a strong plastic housing. **sera** housings and base rings cope with any requirements and can, for example, withstand chemical attack due to the material they are made from.

## CONTROL

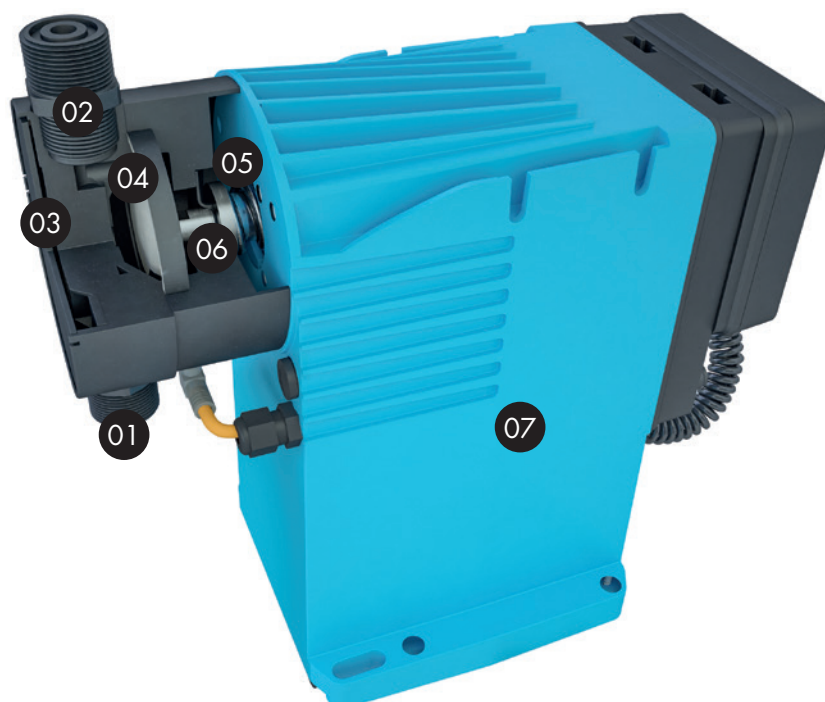
The flow rate of the **sera** stepper motor pumps can be controlled continuously by hand or by means of signals. An adjustment range of 1:1000 can be covered in this way. The stroke speed is used as the control mechanism.

## SPECIAL DESIGNS

We offer individual solutions for special dosing tasks, including tri-clamp connection and integration into a PROFIBUS/PROFINET network with the INTERFACE MODULE.

## ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, suction lances, etc.



- 01 | Suction valve
- 02 | Pressure valve
- 03 | Pump body
- 04 | Diaphragm
- 05 | Pressure spring
- 06 | Connection rod
- 07 | Housing

# DIAPHRAGM PUMP

## THE ALLROUNDER PUMP

OPERATING RANGE up to max. 10 bar / 1740 l/h

**sera** diaphragm pumps are oscillating positive displacement pumps for dosing liquids. The medium to be conveyed is separated from the drive by a diaphragm. It is therefore protected from the damaging effects of the medium. They are used wherever leakage-free and precise dosing is important, as with corrosive, malodorous, abrasive, radioactive, flammable, viscous or toxic media. Flow rate adjustment by stroke frequency adjustment by means of an external frequency converter and manual stroke length adjustment for optimal adjustment to any requirements.



### ADVANTAGES AT A GLANCE

- High dosing accuracy
- Long diaphragm service life
- Linear control characteristics
- Leakage-free
- Low maintenance
- ATEX-compliant designs available
- Can be run dry indefinitely

### SAMPLE APPLICATIONS

- Drinks industry
- Food industry
- Dye and paint manufacturing
- Power stations
- Water treatment
- Shipbuilding
- Electroplating
- Textile industry
- Wastewater treatment

### AUTOMATIC

#### FLOW RATE ADJUSTMENT

- Three-phase motors suitable for use with an external frequency converter for stroke frequency adjustment
- Actuators with positioning controllers for automatic stroke length adjustment

### OPTIONAL DESIGNS

- Diaphragm monitoring
- Suction height 8 mWS
- Controllable variants

For more information, see operating manuals:

- [Safety instructions](#)
- [Diaphragm pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)
- [C control system C410.2](#)
- [PROFIBUS C410.2](#)



## DIAPHRAGM

## PUMP

## VERSIONS

## MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

## PUMP BODIES AND VALVES

PVC-U, PP, PVDF, PP-FRP, PVDF-FRP, 1.4571

## VALVE BALLS

PTFE, 1.4401

## VALVE SEALS

EPDM, FPM, FEP-coated

## WORKING DIAPHRAGM

PTFE-laminated

## DRIVE

Each drive unit consists of a proven motor model, coupled with a stroke mechanism in a robust housing. **sera** housings cope with even the harshest conditions. Their material thickness and surface treatment can even withstand chemical attack. The flow rate can be constant or controlled continuously. In the controllable design, this is achieved manually by adjustment of the stroke length.

Automatic flow rate adjustment can be carried out by means of the following options:

Three-phase motors suitable for use with an external frequency converter for stroke frequency adjustment

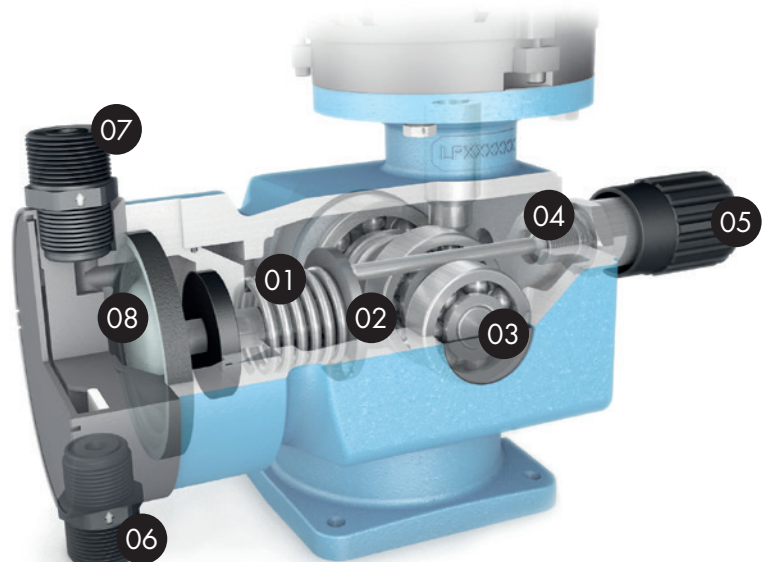
Actuators with positioning controllers for automatic stroke length adjustment

## SPECIAL DESIGNS

We offer individual solutions for special dosing tasks: these include pump bodies with special nominal widths, double valve designs and valves with spring loading, with elastic ball seats, flushing devices for interval or final flushing to prevent sediments in pump bodies, integration of stroke encoders, diaphragm rupture monitoring, special materials such as titanium or Hastelloy, with a cleanable design.

## ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, flow meters, suction lances, etc.



- 01 | Return spring
- 02 | Connection rod plate
- 03 | Eccentric shaft
- 04 | Adjusting spindle
- 05 | Setting wheel
- 06 | Suction valve
- 07 | Pressure valve
- 08 | Diaphragm

# MULTI-LAYER DIAPHRAGM PUMP

## MAXIMUM PROCESS RELIABILITY

OPERATING RANGE up to max. 20 bar / 1440 l/h

sera multi-layer diaphragm pumps work according to the same functional principle as conventional diaphragm pumps, i.e. the diaphragm is oscillated mechanically by means of a connection rod and as a result, the dosing medium is moved.



### ADVANTAGES AT A GLANCE

- High operational reliability thanks to the multi-layer diaphragm technology
- Diaphragm status display via integrated diaphragm monitoring system (optical as standard/electrical available as an option)
- Outstanding suction properties with no additional components
- Can be used in areas with explosion protection with optional equipment variants

### SAMPLE APPLICATIONS

- Cleaning in place (CIP)
- Wastewater treatment
- Exhaust gas treatment

### CONTROLLABLE VARIANTS

- Future-proof pump concept with integrated, multi-functional control electronics
- Easy commissioning with "Plug&Dose"
- High reliability with viscous media thanks to slow mode technology

### MULTI-LAYER DIAPHRAGMS

Complex dosing tasks as far as technical safety is concerned can be completed by using multi-layer diaphragms. The greater safety requirements are taken into account by the significantly longer diaphragm service life compared to single-layer diaphragms and diaphragm monitoring (pressure switches, manometers, etc.).

### MULTI-LAYER DIAPHRAGM PACKAGE

This consists of three PTFE diaphragms. This concept with diaphragm monitoring as standard ensures that there are absolutely no leaks if the working diaphragm is damaged. Damage to the working diaphragm does not result in direct dosing pump failure.

For more information, see operating manuals:

- [Safety instructions](#)
- [Multi-layer diaphragm pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)
- [Diaphragm monitoring](#)
- [C control system C410.2](#)
- [PROFIBUS C410.2](#)

# MULTI-LAYER DIAPHRAGM PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

### PUMP BODIES AND VALVES

PVC-U, PP, PVDF, 1.4571, PP-FRP, PVDF-FRP, titanium, Hastelloy

### VALVE BALLS

PTFE, 1.4401, Hastelloy

### VALVE SEALS

EPDM, FPM, FEP-coated

### WORKING DIAPHRAGM

PTFE (3-layer)

### DRIVE

Each drive unit consists of a proven motor model, coupled with a stroke mechanism in a robust housing. **sera** housings cope with even the harshest conditions. Their material thickness and surface treatment can even withstand chemical attack.

### CONTROL

The flow rate of the **sera** multi-layer diaphragm pump can be controlled constantly or continuously.

- Three-phase motors with frequency converter for stroke frequency adjustment
- Stroke length adjustment

In this case, the stroke length of the connection rod is shifted so that the diaphragm is not completely retracted. This results in a lower flow volume per stroke.

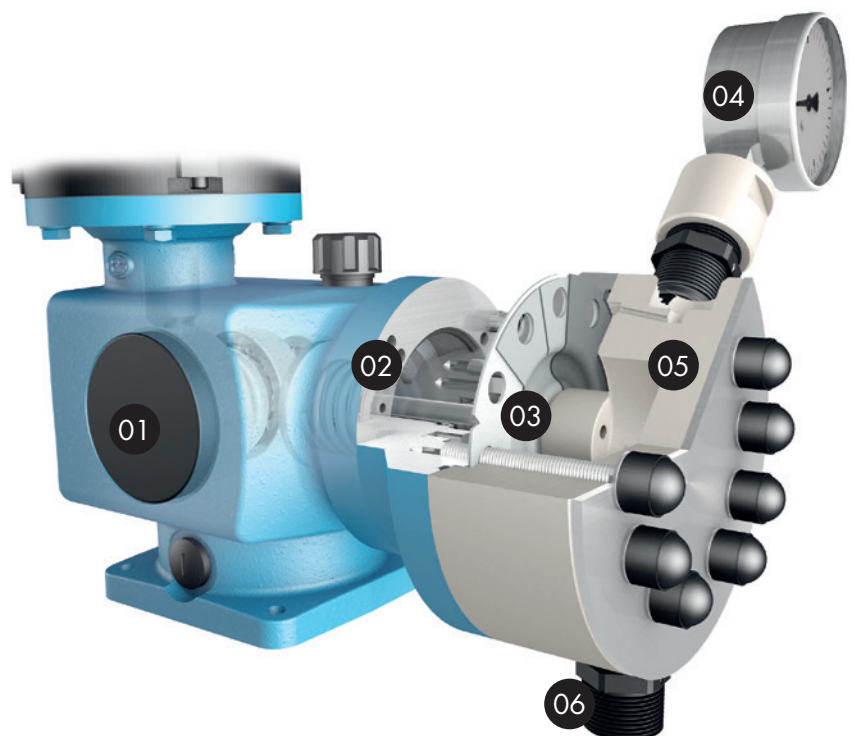
### SPECIAL DESIGNS

We offer individual solutions for special dosing tasks: these include double valves, valves with spring loading, integrated stroke encoders, electric actuators.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, flow meters, suction lances, etc.

- 01 | Stroke mechanism
- 02 | Connection rod
- 03 | Multi-layer diaphragm package
  - Working diaphragm
  - Signal diaphragm
  - Protective diaphragm
- 04 | Diaphragm monitoring by
  - Manometer (RF4xx.2 - ...ML)
  - Pressure switch (C4xx.2 - ...ML)
- 05 | Pump body
- 06 | Suction valve



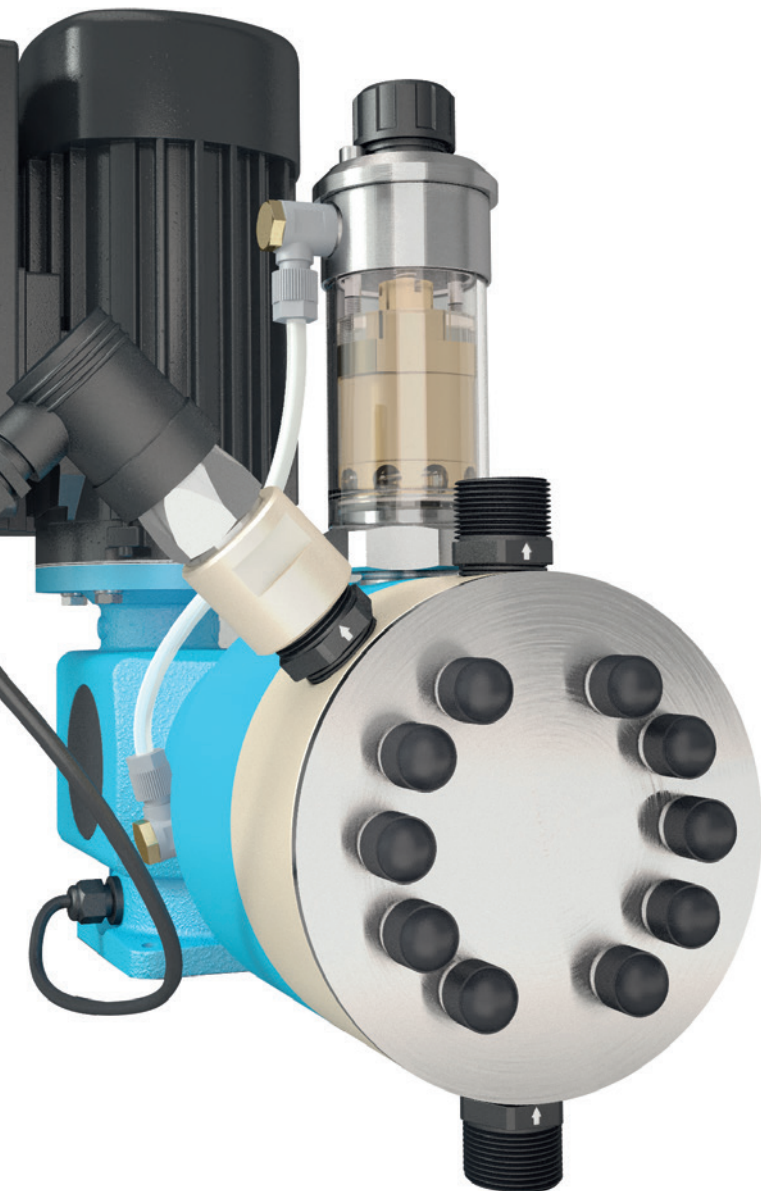


# PISTON DIAPHRAGM PUMP

## VERSATILE APPLICATION

**OPERATING RANGE** up to max. 80 bar / 1020 l/h

The stroke movement of the mechanically controlled piston is transmitted to the multi-layer diaphragms hydraulically. An integrated compensating valve guarantees exceptional dosing accuracy and offers optimal overload protection: If the counterpressure is excessive, the hydraulic fluid can escape into the compensating valve.



### ADVANTAGES AT A GLANCE

- High operational reliability thanks to the multi-layer diaphragm technology
- Diaphragm status display via integrated diaphragm monitoring system (optical as standard/electrical available as an option)
- Outstanding suction properties with no additional components
- Can be used in areas with explosion protection with optional equipment variants

### SAMPLE APPLICATIONS

- Power station technology
- Drinking water treatment
- Wastewater treatment
- Brewery technology

### ADVANTAGES OF CONTROLLABLE VARIANTS

- Future-proof pump concept with integrated, multi-functional control electronics
- Easy commissioning with "Plug&Dose"
- High reliability with viscous media thanks to slow mode technology

### MULTI-LAYER DIAPHRAGMS

Complex dosing tasks as far as technical safety is concerned can be completed by using multi-layer diaphragms, as the diaphragm rupture monitoring system (pressure switch, manometer, etc.) takes account of the greater safety requirements. The diaphragm service life is also significantly longer than single-layer diaphragms. A rupture in the diaphragm does not lead directly to failure of the dosing pump.

For more information, see operating manuals:

- [Safety instructions](#)
- [Piston diaphragm pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)
- [Diaphragm monitoring](#)

# PISTON DIAPHRAGM PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

### PUMP BODIES AND VALVES

PVC-U, PP, PVDF, 1.4571, PP-FRP, PVDF-FRP, titanium, Hastelloy

### VALVE BALLS

PTFE, 1.4401, Hastelloy

### VALVE SEALS

EPDM, FPM, FEP-coated

### WORKING DIAPHRAGM

PTFE (3-layer)

### DRIVE

Each drive unit consists of a proven motor model, coupled with a stroke mechanism in a robust housing. **sera** housings cope with even the harshest conditions. Their material thickness and surface treatment can even withstand chemical attack.

### CONTROL

The flow rate of the **sera** piston diaphragm pump can be constant or continuously controlled. Manual flow rate adjustment by:

- Stroke length adjustment

Automatic flow rate adjustment, depending on analogue or digital input signals, with:

- Three-phase motors with frequency converter for stroke frequency adjustment
- Actuators with positioning controllers for stroke length adjustment

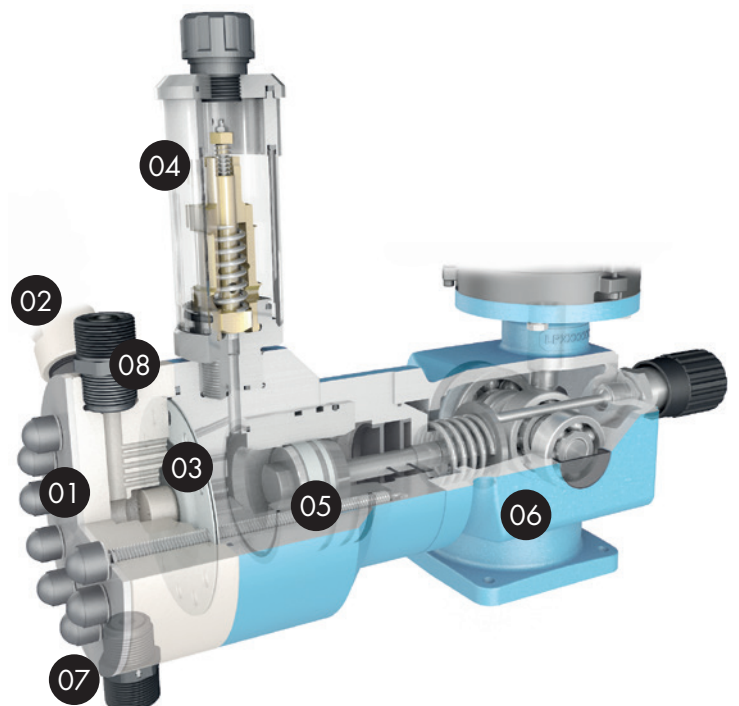
### SPECIAL DESIGNS

We offer individual solutions for special dosing tasks: these include double valves, valves with spring loading, integrated stroke encoders, electric actuators.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, flow meters, suction lances, etc.

- 01 | Pump body
- 02 | Diaphragm monitoring by
  - Manometer (RF4xx.2 - ...KM)
  - Pressure switch (C4xx.2 - ...KM)
- 03 | Multi-layer diaphragm package
  - Working diaphragm
  - Signal diaphragm
  - Protective diaphragm
- 04 | Hydraulic compensating valve
- 05 | Piston
- 06 | Stroke mechanism
- 07 | Suction valve
- 08 | Pressure valve



# PISTON PUMP

## FOR HIGH PRESSURE

OPERATING RANGE max. 140 bar / 22 l/h

The 409.2 K piston pump is versatile in its application and extremely reliable despite its high pressure range. With low-wear components, hardly any maintenance work is required and the familiar quality and reliability is impressive.



### ADVANTAGES AT A GLANCE

- Large pressure range
- High operational reliability
- Easy commissioning
- Extended operating range
- Various versions available

### SAMPLE APPLICATIONS

- Water treatment
- Food/drinks industry
- Chemical industry, petrochemistry, gas, refineries
- Power stations
- Pharmaceuticals

### PERFORMANCE FEATURES

- High pressure range with pressures up to 140 bar
- High operational reliability thanks to leakage nozzles and optional flushing nozzles
- Little maintenance work thanks to low-wear components
- Stroke mechanism in spring-cam drive design
- Linear/continuous adjustment of the stroke length from 0...100 %, display of stroke length adjustment in standard design, manual stroke length adjustment
- RF design: Can be operated with frequency converter

For more information, see operating manuals:

- [Safety instructions](#)
- [Piston pump](#)
- [Pro+ control system](#)
- [PROFIBUS](#)
- [PROFINET](#)



PISTON

PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use.

### PUMP BODY

1.4122V

### VALVES

1.4571/1.4581

### PISTON

1.4571

### PISTON SEAL

PE

### DRIVE

Each drive unit consists of a proven motor model, coupled with a stroke mechanism in a robust housing. **sera** housings cope with even the harshest conditions. Their material thickness and surface treatment can even withstand chemical attack.

### CONTROL

The flow rate of the **sera** piston pumps can be controlled constantly or continuously. Manual flow rate adjustment by:

- Stroke length adjustment

Automatic flow rate adjustment, depending on analogue or digital input signals, with:

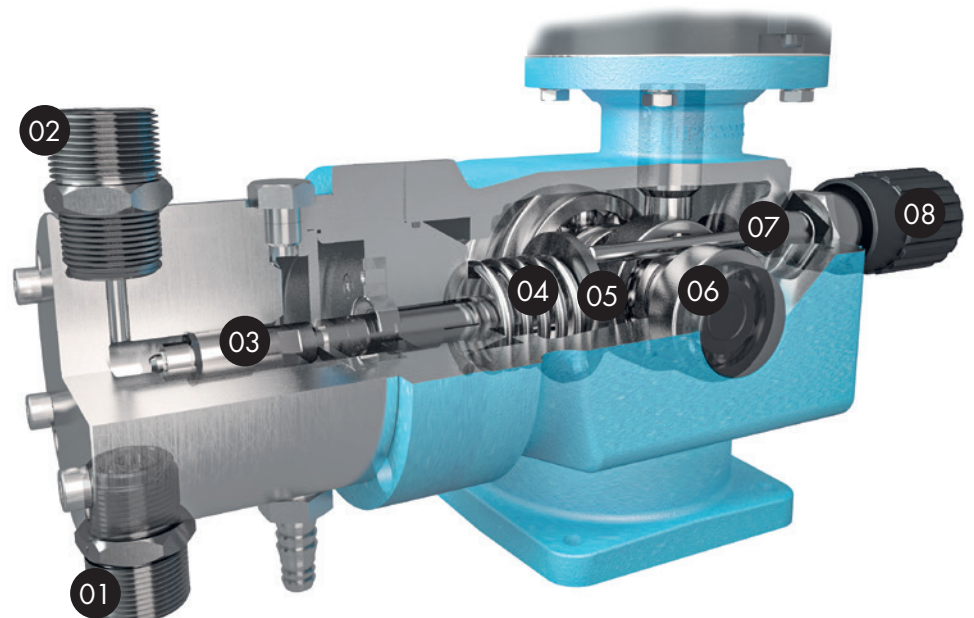
- Three-phase motors with frequency converter for stroke frequency adjustment
- Actuators with positioning controllers for stroke length adjustment

### SPECIAL DESIGNS

We offer individual solutions for special dosing tasks: additional optional flushing nozzles in the cylinder, integrated stroke encoders and electric actuators.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, dosing valves, flow monitors, flow meters, suction lances, etc.



- 01 | Suction valve
- 02 | Pressure valve
- 03 | Piston
- 04 | Return spring
- 05 | Connection rod
- 06 | Eccentric shaft
- 07 | Adjusting spindle
- 08 | Setting wheel

# MULTI-HEAD PUMP

## FOR SPECIAL AND LOW-PULSATION TASKS

OPERATING RANGE up to max. 7500 l/h and up to 5 heads

### ADVANTAGES AT A GLANCE

- Extremely low-pulsation conveying due to stroke offset
- Up to 5 heads possible, also in different capacities
- Each head individually adjustable in capacity
- Maximum flexibility and accuracy
- Convey different media in one process

### SAMPLE APPLICATIONS

- Power station technology
- Dye and paint manufacturing
- Drinks industry
- Textile industry
- For all sectors that require very low pulsation
- With different dosing rates in interdependent operation

### CONTROL SYSTEM

- 01** | Pro+ control system  
Optionally available with INTERFACE MODULE  
PROFIBUS / PROFINET
- 02** | Motor DSM / WSM
- 03** | Motor DSM with frequency converter
- 04** | C control system (not for 410.2 KM)  
Optionally available with PROFIBUS

### HOUSING TYPE

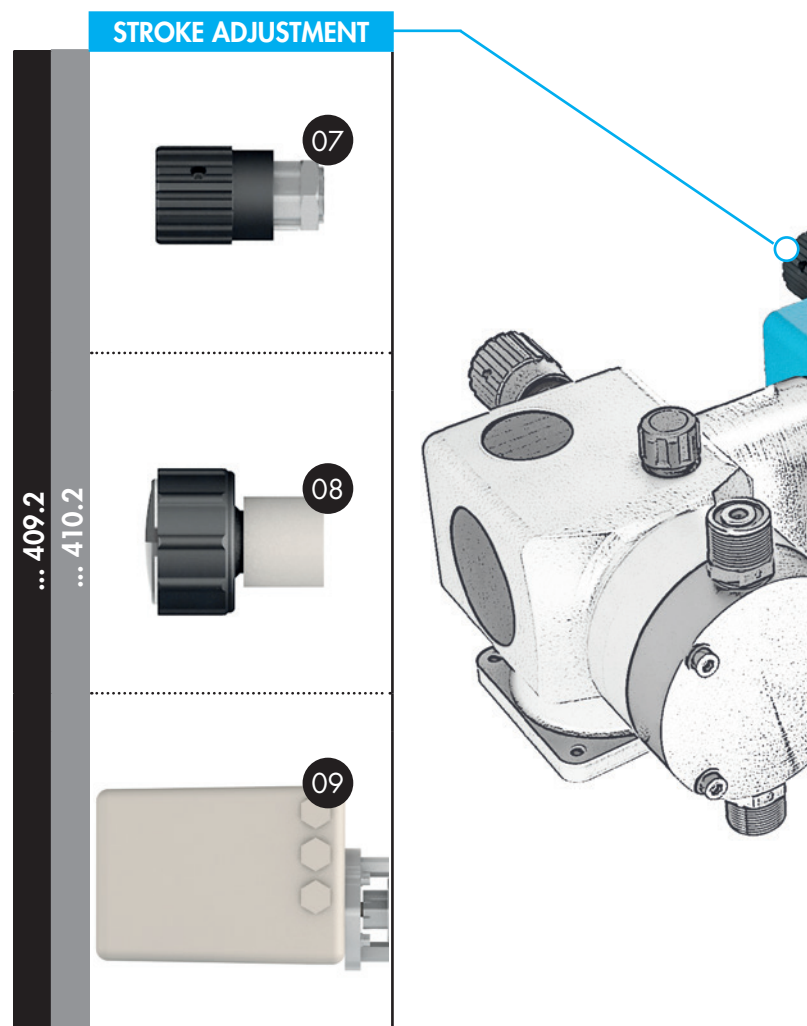
- 05** | 409.2
- 06** | 410.2

### STROKE ADJUSTMENT

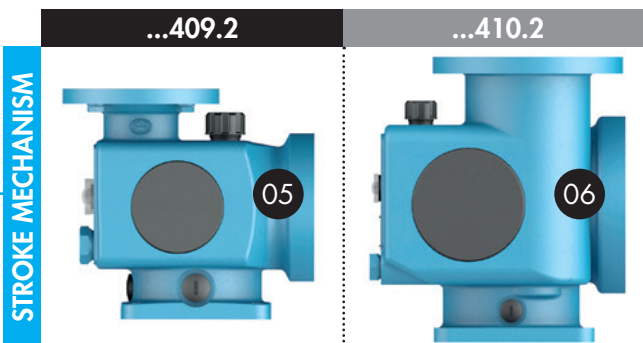
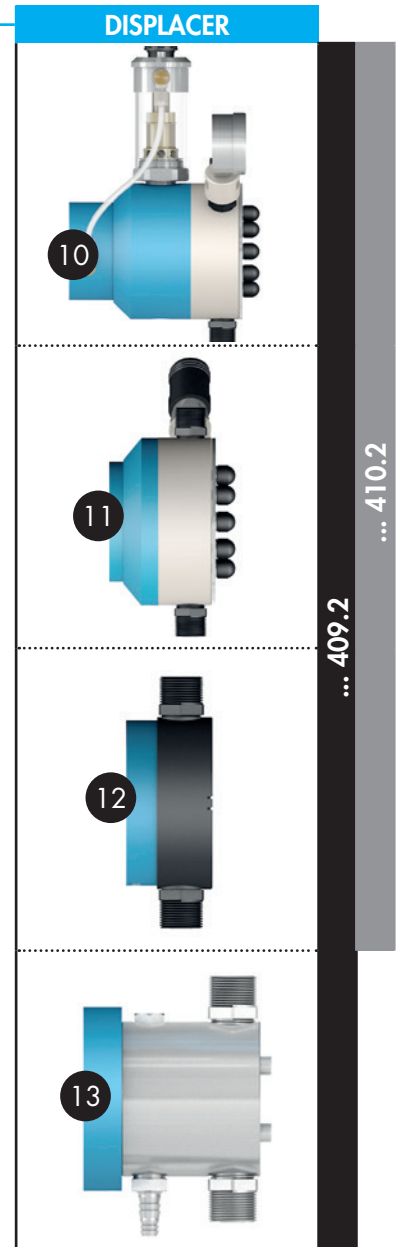
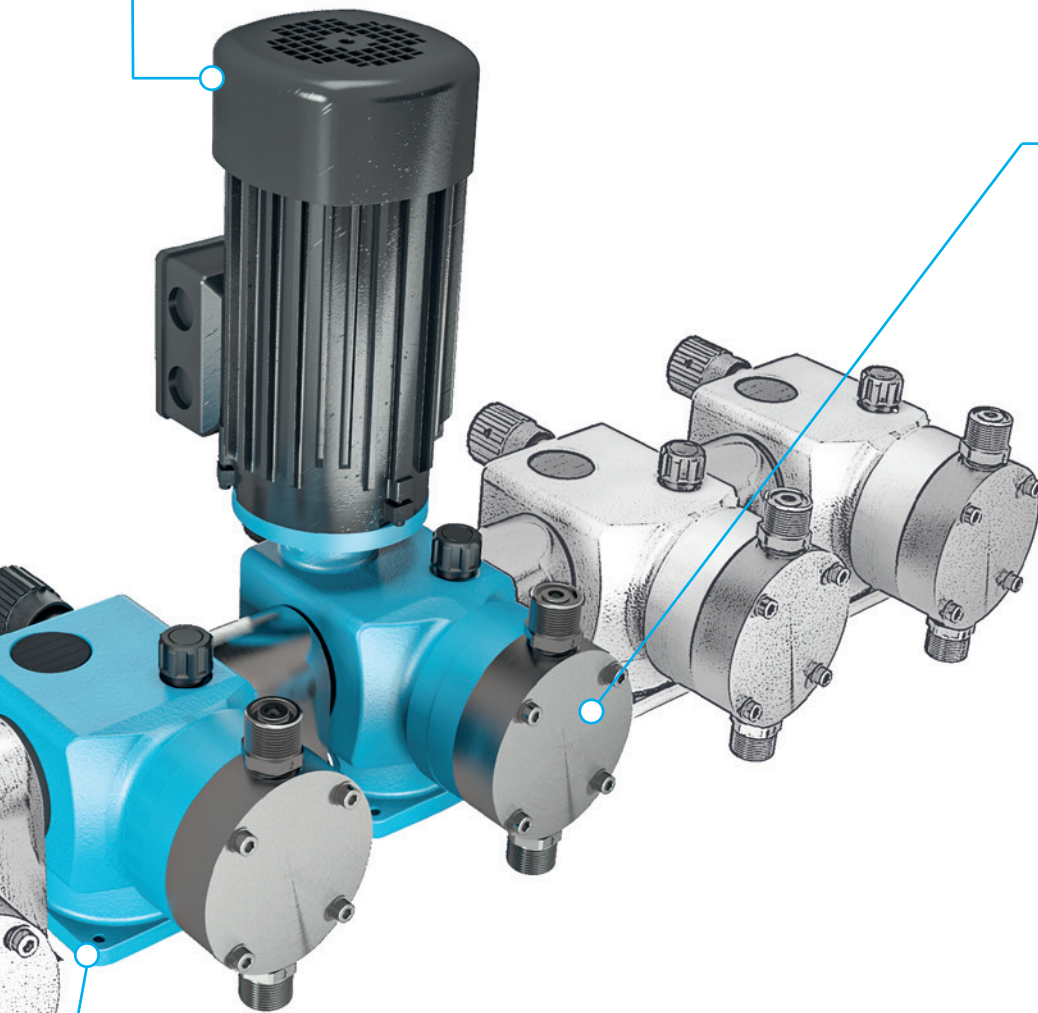
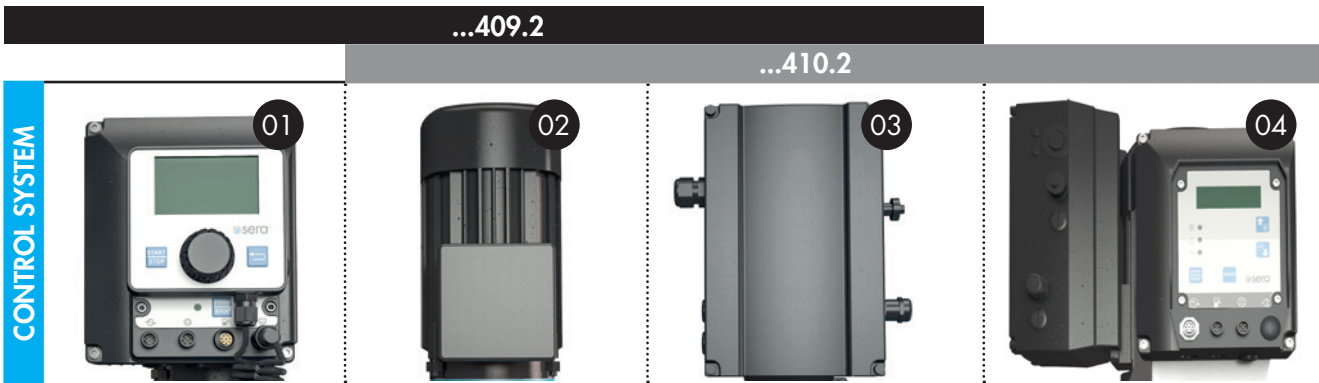
- 07** | Manual with simple scale
- 08** | Manual with position indicator
- 09** | Electrical with actuator

### DISPLACER TYPE

- 10** | Single-layer diaphragm pump
- 11** | Piston diaphragm pump
- 12** | Multi-layer diaphragm pump
- 13** | Piston pump



# VERSIONS





# airPUMP AIR OPERATED DIAPHRAGM PUMP

SAFELY CONVEY AND TRANSFER

OPERATING RANGE up to max. 8 bar / 900 l/min

**sera** air operated diaphragm pumps are cost-effective, leakage-free positive displacement pumps. They have two diaphragms linked by a connecting rod. Compressed air is supplied alternately to the air chambers behind the diaphragms through an air control valve, so that one diaphragm is pushed forward while the other is pulled back (pressure/suction stroke). The special design of the air control valve ensures that the pumps can always be started up safely and there are no inconvenient downtimes. The valve balls open and close with the stroke rhythm of the diaphragms.



## ADVANTAGES AT A GLANCE

- Long service life
- Inexpensive
- Leakage-free
- Overpressure protection
- ATEX-compliant designs available
- Dry priming
- Can be run dry
- FDA design

## SAMPLE APPLICATIONS

- Drinks industry
- Food industry
- Dye and paint manufacturing
- Power stations
- Chemical intake systems
- Shipbuilding
- Electroplating
- Textile industry

## OPTIMUM DESIGNS

- pulsation damper
- Compressed air supply units

Further accessories are available on request.

For more information, see product information:

- [Air operated diaphragm pumps airPUMP](#)

AIR OPERATED

DIAPHRAGM

PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

### PUMP BODIES AND VALVES

PP, PVDF, PP-CFK, aluminium, AISI 316

### VALVE BALLS

PTFE, AISI 316

### VALVE SEALS

EPDM, FPM, PTFE

### WORKING DIAPHRAGM

PTFE, santoprene, neoprene

### DRIVE

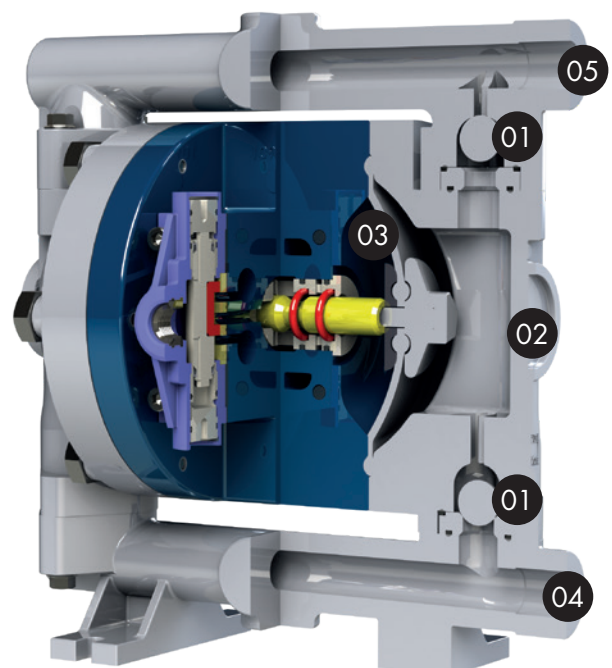
Air operated diaphragm pumps consist of double housings that contain two diaphragms connected by a connecting rod.

The air control valve ensures that the air chambers behind the diaphragms are alternately supplied with compressed air. In the process, one diaphragm is pushed forwards (= pressure stroke) and the other is pulled backwards (= suction stroke).

The special design of the air control valve ensures that the pumps can always be started up safely and there are no inconvenient downtimes. The valve balls open and close with the stroke rhythm of the diaphragms.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including compressed air supply units, pulsation dampers and connection adapters, etc.



- 01 | Ball valve
- 02 | Pump body
- 03 | Diaphragm
- 04 | Suction-side connection
- 05 | Connection on pressure side

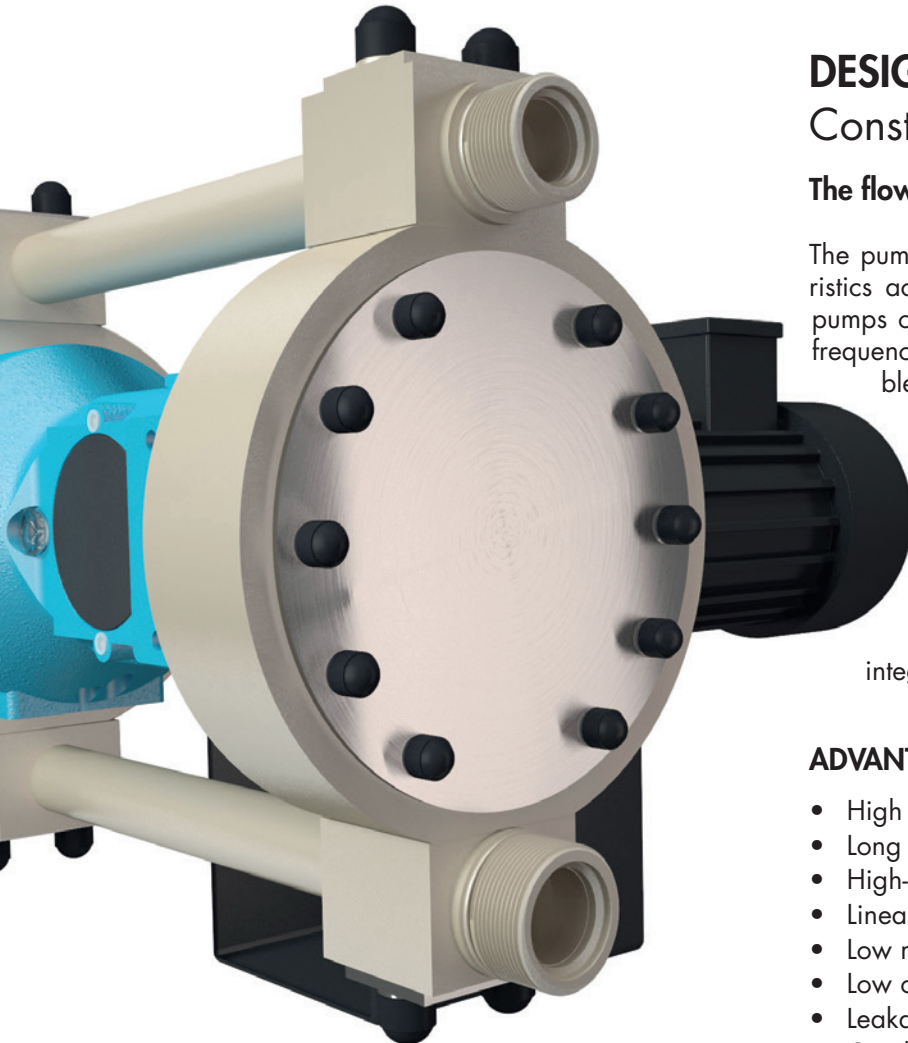
# FEEDING PUMP

## LOW-PULSATION DOUBLE ACTING DIAPHRAGM PUMP

### FOR HIGH CAPACITY

**OPERATING RANGE** up to max. 4 bar / 3100 l/h

**sera** feeding pumps in the ZXM 411.3 and ZXRI 411.3 ranges are oscillating positive displacement pumps for conveying and dosing liquids in all areas of industry.



## DESIGN

### Constant stroke frequency

#### The flow rate can be manually adjusted

The pump has two pump heads with technical characteristics according to the performance overview. Feeding pumps of the ZXM series operate with a constant stroke frequency, which means that the flow rate is not adjustable.

The ZX series does not have stroke length adjustment like the other motor-driven **sera** diaphragm pumps. However, the ZXRF versions can be controlled via an external frequency converter, allowing the flow rate to then also be adapted to the process conditions. The flow rate of the ZXRI series can be set manually on the integrated frequency converter.

## ADVANTAGES AT A GLANCE

- High dosing accuracy
- Long diaphragm service life
- High-grade materials
- Linear control characteristics (ZXRI models)
- Low maintenance
- Low operating costs
- Leakage-free
- Can be run dry indefinitely
- Easy to use
- Design in accordance with ATEX
- Large suction heights (up to 8 mWS)

## SAMPLE APPLICATIONS

Fluid media with corrosive, malodorous, abrasive, radioactive, flammable, viscous or toxic properties.

For more information, see operating manual:

- [Diaphragm pump ZX 411.3](#)



FEEDING

PUMP

## VERSIONS

### MATERIALS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

### PUMP BODIES AND VALVES

PVC-U, PP, PVDF, 1.4571

### VALVE BALLS

PTFE, 1.4401, Hastelloy

### VALVE SEALS

EPDM, FPM, FEP-coated

### WORKING DIAPHRAGM

PTFE-laminated

### DRIVE

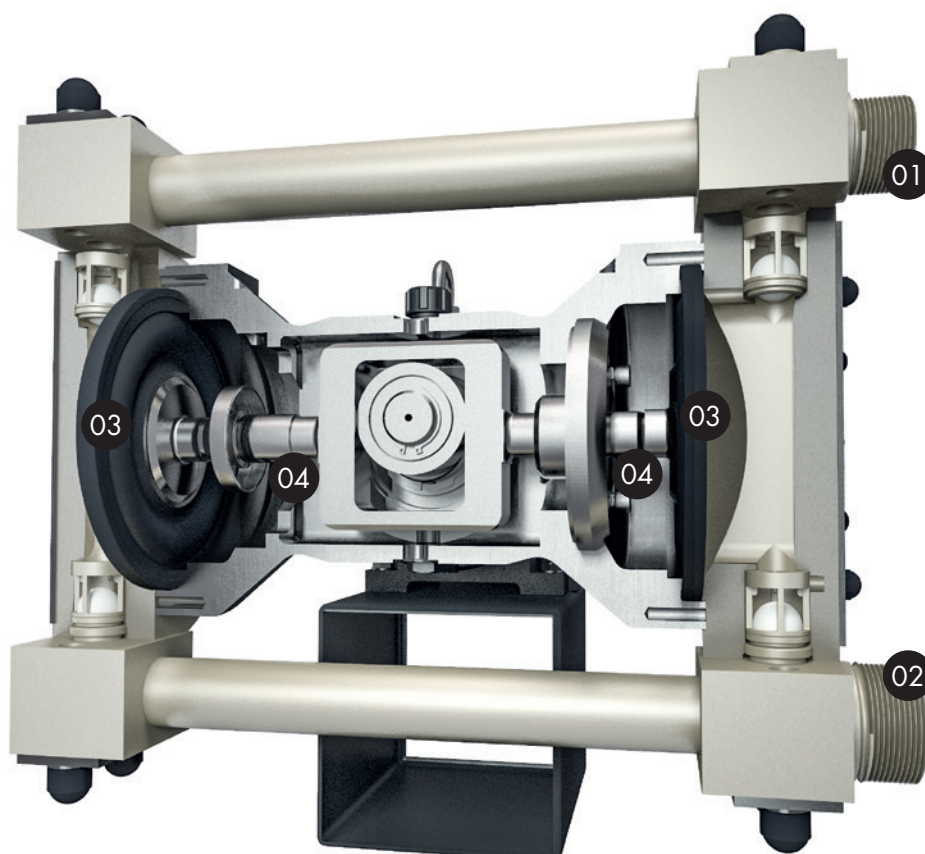
Each drive unit consists of a proven motor model, coupled with a stroke mechanism in a robust housing. **sera** housings cope with even the harshest conditions. Their material thickness and surface treatment can even withstand chemical attack.

### CONTROL

The flow rate of the **sera** diaphragm feeding pumps is either constant (ZXM) or manually adjustable (ZXRI). Automatic flow rate adjustment, depending on analogue input signals, thanks to three-phase motors with frequency converters for stroke frequency adjustment.

### ACCESSORIES

We supply all accessories required for optimal installation of dosing pumps, including relief valves, pressure-keeping valves, pulsation dampers, priming aids/siphon vessels, etc.



- 01 | Connection on pressure side
- 02 | Suction-side connection
- 03 | Working diaphragm
- 04 | Connection rod

# MAGNETICALLY COUPLED CENTRIFUGAL PUMP

PUMP\* CAN BE RUN DRY

OPERATING RANGE up to max. 4,5 bar / 50 m<sup>3</sup>/h

ONLY  
AVAILABLE IN THE  
**D-A-CH\*\***  
REGION!



**sera** | EXCELLENCE  
PARTNER PRODUCT



## DB SERIES

### Standard priming

The standard for conveying corrosive media

- Extreme dry running capacity
- Design in accordance with ATEX 2014/34/EU
- Available in PP and PVDF
- Horizontal or vertical installation (only with IEC motors)
- Specific weight above 1.8 kg/dm<sup>3</sup>



## SP SERIES

### Self-priming

Innovative and versatile magnetically coupled

- Powerful – despite low energy consumption
- Self-priming – up to 7.6 m
- Fast suction – 5.5 m in 90 s
- Very simple to operate
- Leakage-free



\* Can be run dry with appropriate material pairing

\*\* **D-A-CH**: **D** – Germany, **A** – Austria, **CH** – Switzerland

For more information, see product information:

- [Magnetically coupled centrifugal pump of the DB/SP series](#)

## CENTRIFUGAL

## PUMP

## VERSIONS

## PROPERTIES AT A GLANCE – DB AND SP SERIES

- Block construction and design
- Material: PP or PVC
- NdFeBd\* magnets in every model
- Replaceable shaft bearing
- Balancing in accordance with ISO 1940 G2.5
- IEC and NEMA motors adaptable
- Easy set drive solenoid
- Attachment on the motor without disassembly
- Back pull-out design
- CE certified
- DB series available in accordance with ATEX 2014/34/EU

\* Neodymium-iron-boron permanent magnets

## SPECIFICATIONS

- Efficiency up to 70%
- System pressure up to 6.2 bar
- Maximum viscosity  
DB series: above 150 cP  
SP series: above 50 cP
- Max. media temperature  
PP: up to 82 °C  
PVDF: up to 104 °C

## TECHNICAL DATA

- The SP series stores liquid for re-priming without foot valve
- Suction height up to 7.6 m \*\*
- The SP series draws up to 5.5 m in 90 s \*\*\*.

\*\* Suction height for water

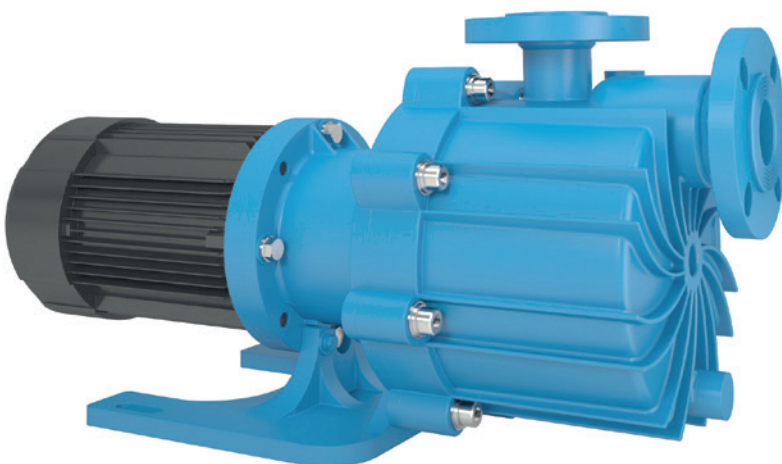
\*\*\* with max. impeller diameter

SAMPLE APPLICATIONS  
DB SERIES AND SP SERIES

- Chemical industry
- Metalworking
- Wastewater treatment
- Electronics manufacturing
- Original Equipment Manufacturer (OEM)
- DI & ultrapure water
- Exhaust air scrubber
- Mining
- Paper mills
- Pharmaceutical industry
- Cooling systems

## SAMPLE APPLICATIONS SP SERIES

- Sump
- Underground tanks
- Emptying railway carriages and tankers
- Suction over the edge of the tank
- Double-walled tanks
- Piping systems that are prone to air inclusions.





# DRUM AND CONTAINER PUMPS

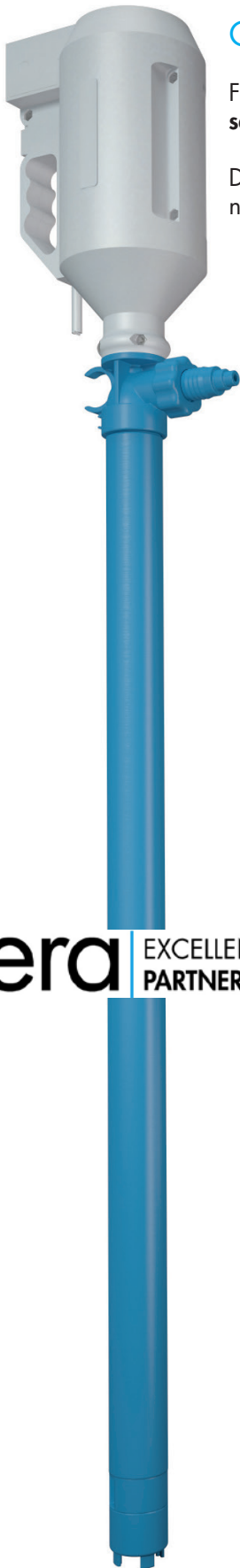
THE RIGHT PUMP FOR ANY TASK



**OPERATING RANGE** up to max. 150 l/min

From light and handy for quick use to extremely robust for the heaviest industrial applications, **sera** covers all possible areas of use!

Drum and container pumps are used in almost all areas of industry. They are suitable for stationary operation, and also very flexible for mobile applications.



**sera** EXCELLENCE  
PARTNER PRODUCT

## ADVANTAGES AT A GLANCE

- A wide range of diverse pumping units and drives guarantees maximum flexibility
- For very high-viscosity media
- Suitable for viscosities up to 100,000 mPas
- FDA-compliant
- ATEX-compliant

## WE HAVE EVERYTHING THAT YOU NEED

- Whether for emptying drums or for transferring from A to B
- Whether electric or pneumatic drive
- Whether in the standard design or in accordance with ATEX
- Whether for high-viscosity or low-viscosity media

## SAMPLE APPLICATIONS PF SERIES AND EF SERIES

- Acids
- Alkalis
- Solvents
- Cleaning agents
- Coolants
- Oils
- and much more

## SAMPLE APPLICATIONS ECCENTRIC SCREW DRUM PUMPS

- Food or other highly viscous media

\* **D-A-CH:** **D** – Germany, **A** – Austria, **CH** – Switzerland

For more information, see product information:

- [Drum and container pumps](#)

**DRUM &  
CONTAINER  
PUMPS**

## VERSIONS

### MATERIALS

PP, PVDF and stainless steel

### PIPE LENGTHS

96 cm up to 183 cm

### FLOW RATE

to approx. 150 l/min

### VISCOSITY

to max. 10,000 mPas



## ACCESSORIES

- Flow meter



- USB adapter



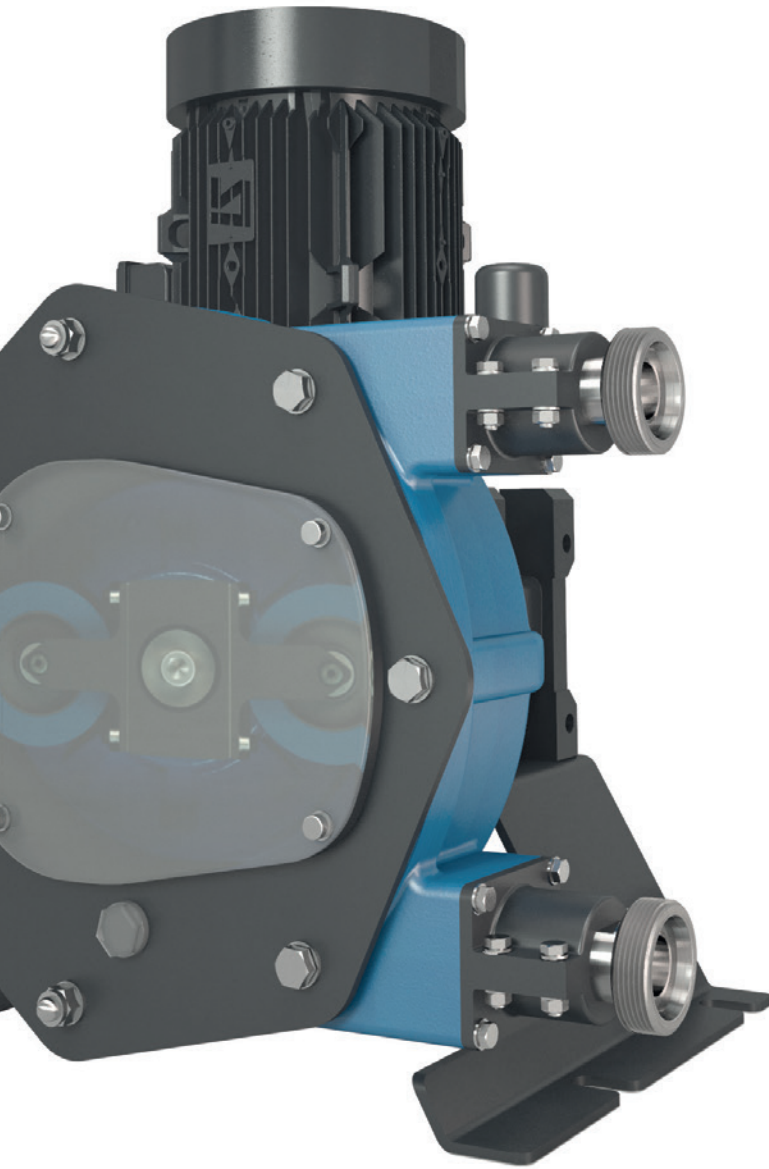
- Pump nozzles



# HOSE PUMP

FOR ALMOST ALL MEDIA – AND IN CONTINUOUS OPERATION!

OPERATING RANGE up to max. 10 bar / 13000 l/h



## SAMPLE APPLICATIONS

- Paper industry
- Ceramics and construction industry
- Food and cosmetics industry
- Mining industry
- Chemical industry
- Water supply

## ADVANTAGES AT A GLANCE

- Maximum abrasion resistance
- Unrivalled suction capacity
- Can be run dry indefinitely
- No valves or slide ring seals
- Gentle conveying
- Pumps in both directions possible
- Full dosing control system
- Industrial, chemical-resistant and food-compatible designs
- Dosing accuracy of +/-1%

## ADVANTAGES OF THE HOSE PUMPS COMPARED TO:

### HOSE PUMPS WITH ANTI-SKID TECHNOLOGY

- Up to 30% more energy-saving, easier hose replacement, very long hose service life, extremely cost-effective, wide operating range, low starting torque

### ECCENTRIC SCREW PUMPS

- Can be run dry and no mechanical seal present, easy adaptation for pumping corrosive media

### AIR OPERATED DIAPHRAGM PUMPS

- Incomparably higher efficiency, no valves, therefore better performance with media that contain solids

## NO PROBLEMS WITH DIFFICULT AND CHALLENGING PUMPING MEDIA

### ABRASIVE MEDIA

- Lime milk, activate carbon, thin and thick slurries

### CORROSIVE MEDIA

- Sodium hypochlorite, iron(II,III) chloride, hydrochloric acid

### VISCOUS MEDIA

- Water-based adhesives, lubricants, creams and resins

### SHEAR-SENSITIVE MEDIA

- Latex, polymers, flocculants and food





HOSE

PUMP

## VERSIONS

### HOSE MATERIAL

Natural rubber, EPDM, NBR (food-safe), Hypalon®

### CONNECTIONS

Stainless steel 1.4401, PP, PVDF (PTFE)

### THE LATEST HOSE TECHNOLOGY

- High-quality hose resulting from a unique manufacturing process
- Extruded inner layer, high-density textile reinforcement and precision-manufactured outer layer ensure optimal compression and fast installation thanks to controlled tolerances
- The materials available allow use for all available media and operating conditions
- Excellent performance with abrasive and/or corrosive media as well as at high temperatures
- Low hose wear and simple installation guarantee optimised downtimes

### EASY TO ASSEMBLE, OPERATE AND MAINTAIN

- Quick and easy to assemble, commission and maintain
- Pump designed with innovative assembly makes hose replacement easier
- Maintenance-free pump with low lubricant use minimises waste materials

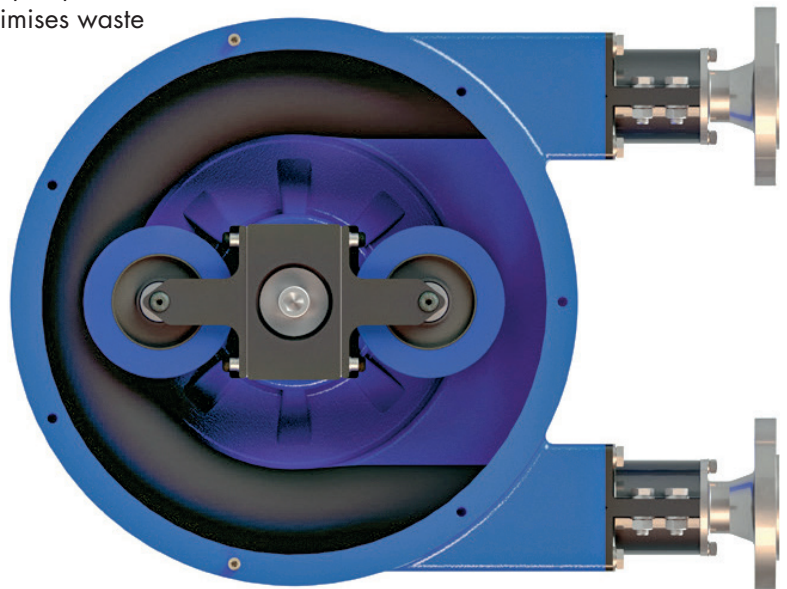
### EXTREME HIGH-PERFORMANCE DESIGN FOR THE MOST DEMANDING APPLICATIONS UP TO 10 bar

- Large metal rollers with integrated oversized bearings to withstand axial forces
- Safe and reliable connection system and very robust materials
- Ideal pumps for continuous operation
- Unrivalled pump service life and excellent performance under all operating conditions

### XXL ROLLER TECHNOLOGY

- Excellent hose compression without friction and thus outstanding efficiency
- Low power consumption and long service life thanks to large rollers
- Extremely user friendly thanks to low starting torque and wide frequency range
- High energy savings
- High hose service life and user-friendly operability

### UNIQUELY LARGE ROLLERS FOR MINIMUM WEAR AND MAXIMUM EFFICIENCY



\* D-A-CH: D – Germany, A – Austria, CH – Switzerland

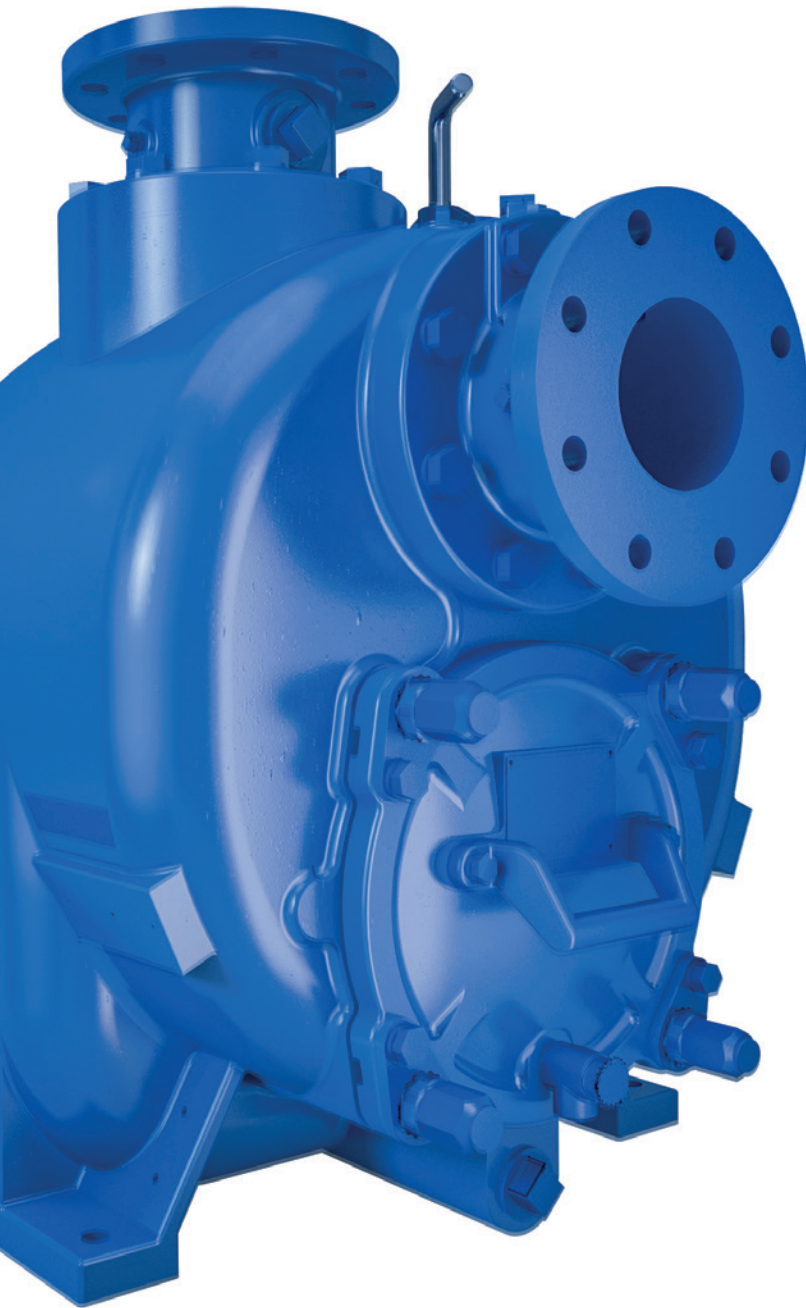
# CENTRIFUGAL PUMP

## HIGH-PERFORMANCE PUMP

OPERATING RANGE **SUPER T SERIES S** up to max. 772 m<sup>3</sup>/h

OPERATING RANGE **SUPER U SERIES S** up to max. 342 m<sup>3</sup>/h

ONLY  
AVAILABLE IN  
SWITZERLAND!



### SUPER T SERIES

The SUPER T SERIES pump is a self-priming centrifugal pump specially designed for conveying heavily contaminated wastewater. Even at increased levels of water contamination, the T Series has superior suction capabilities.

The robust and almost maintenance-free design of the pump meets all expectations that professional users have of centrifugal pumps.

Thanks to the patented Eradicator system, the SUPER T SERIES performs its tasks even when there are increased levels of contamination, for example fabric scrap, cardboard/paper, animal bones or kitchen waste residues.

The Eradicator system cuts up, chops up and crushes the waste pieces, directly avoiding any downtimes during daily operations.

### SUPER U SERIES

The SUPER U SERIES pump is one of the most efficient self-priming centrifugal pumps on the market.

The pump's unique hydraulic design and smooth internal contour ensure low resistance and high efficiency.

The SUPER U SERIES is used for clean and slightly polluted water.

## CENTRIFUGAL

## PUMP

## VERSIONS

## SUPER T SERIES

PUMP SIZE:  
2" (50 mm) up to 10" (250 mm)

CAPACITY:  
10 m<sup>3</sup>/h up to 772 m<sup>3</sup>/h

SUCTION HEIGHT:  
approx. 6 m

## SUPER U SERIES

PUMP SIZE:  
3" (75 mm) up to 6" (150 mm)

CAPACITY:  
Max. 342 m<sup>3</sup>/h

SUCTION HEIGHT:  
approx. 6 m

## ADVANTAGES AT A GLANCE

- Reliable performance in various configurations
- Above ground: safe, hygienic and comfortable to use
- Long service life
- High reliability with Eradicator™

## SAMPLE APPLICATIONS

- Wastewater sector
- Food industry
- Power stations
- Mechanical engineering, etc.





# PROCESS MEASURING AND CONTROL TECHNOLOGY

## FOR THE RESPECTIVE CUSTOMER REQUIREMENTS



As a system provider, **sera** offers customised complete dosing systems (“turn key systems”) alongside its standard dosing systems and components, which are perfectly tailored to the specific customer requirements with extensive process measuring and control technology. The **sera** service portfolio ranges from engineering and programming through system assembly and inspection, to worldwide on-site installation and commissioning – everything from a single source.

Thanks to the latest flow rate, fill level and measuring and control technology, all process parameters are monitored, evaluated and controlled directly in the dosing system or from a control centre, as required. Efficient use of chemicals is therefore guaranteed at all times (e.g. during mixing and preparation).

Communication between the controller and control system can take place by the conventional route, using analogue signals and floating contacts for example, or via on-site PLC and network connections for complex and sophisticated systems. All systems meet the latest VDI guidelines and European standards.



## PROFINET

PROFINET is based on an Industrial Ethernet standard for data transmission and thus not only enables the field level to be linked, but also ensures combination with industrial IT functions, which in turn enables end-to-end application in manufacturing and process automation.

The control electronics of sera dosing pumps can be extended by an INTERFACE MODULE. This is connected directly to the electronics and offers the option of integrating the respective dosing pump into a PROFINET structure. It can be integrated into both ring and tree structures by using two PROFINET connections.

## PROFIBUS

PROFIBUS is a universal field bus that is mainly used in automation technology. It is one of the first serial fieldbus systems to enable the distribution of digital automation devices at field level.

**sera** dosing pumps can be extended with a PROFIBUS interface via the INTERFACE MODULE, and thus be integrated into a PROFIBUS structure.

# ACCESSORIES

## THE RIGHT ACCESSORIES FOR ANY TASK

3



**sera** offers an extensive range of dosing fittings and accessories for a wide variety of process tasks and system peripherals. Our range is available in a variety of materials and designs to maximise the operational reliability of the dosing units and systems for the application concerned. **sera** pulsation dampers are approved and certified in accordance with the Pressure Equipment Directive (2014/68/EU).

The **sera** fittings and accessories range includes:

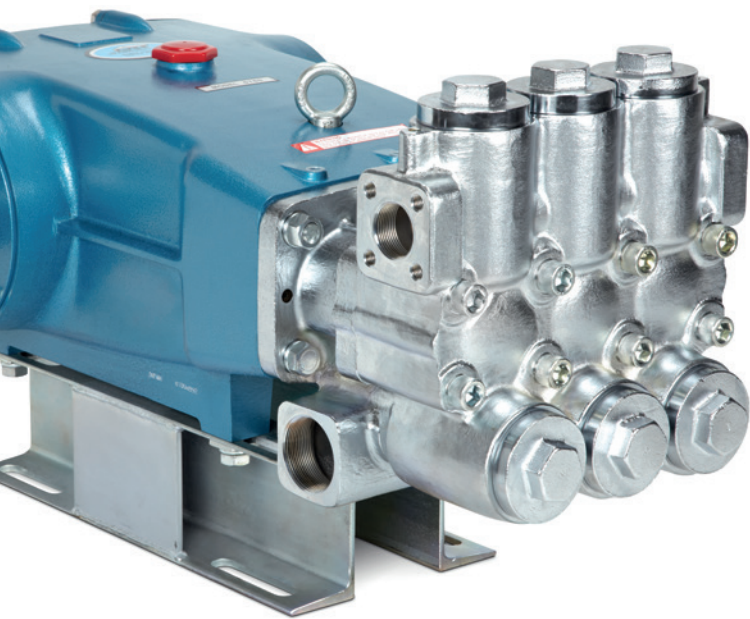
- Dosing, check and foot valves
- Relief valves and pressure-keeping valves
- Multifunctional valves
- Suction lances
- pulsation damper
- Ball valves
- Multifunctional containers
- Calibration pots
- Injection fittings
- Line strainer
- Connectors
- Dosing hoses
- Dosing tank
- Collecting basins
- Mixers and agitators
- Manometers
- Dry material feeder
- Absorption vessels
- Measurement and control sensors

# HIGH-PRESSURE TECHNOLOGY

## HIGH-PRESSURE PUMP FOR CONTINUOUS

OPERATING RANGE 1000 bar / 900 l/min

sera supplies high-pressure pumps and high-pressure pump units for a wide range of applications in which liquids have to be pumped at high pressure. Triplex plunger pumps, which belong to the category of positive or oscillating positive displacement pumps, are mainly used for this purpose. Other pump specifications and modes of operation can of course be selected according to our customers' requirements.



### ADDITIONAL PRODUCT RANGE

- Complete accessories for high-pressure cleaning (valves, hoses, spray guns, spraying pipes, etc.)
- Nozzle technology for a wide range of applications
- Tank cleaning heads for cleaning the interior of tanks
- Dosing technology for washing chemicals

### ADVANTAGES AT A GLANCE

- 3 plungers made of resistant ceramic
- High-grade materials
- Linear control characteristics
- Low maintenance
- Low operating costs
- Easy to use
- Design available in accordance with ATEX
- Seals available in accordance with FDA
- Temperatures -23 °C ... +116 °C

### SAMPLE APPLICATIONS

- Lorry and car cleaning (self-service vehicle washes, lorry washes and car washes)
- Tank cleaning (tank cleaning, container cleaning, IBC cleaning)
- Chemical processes (PU foam production, chemical dosing, liquid CO<sub>2</sub>)
- Reverse osmosis (seawater desalination, drinks industry, dialysis processes, leachate treatment, frack water treatment, industrial wastewater treatment)
- High-pressure cleaning (hot water units, cold water units, stationary and mobile units, water sandblasting, high-pressure phosphating)
- Food (fruit juices, gelatine, ice cream and milk)
- Air-conditioning technology (air humidification, temperature control, dust binding, exhaust gas cooling, condenser cooling)
- Water hydraulics (nuclear power plants, presses, machine tools, mining)
- Special fields (off-shore, waterjet cutting [steel, concrete], water injection for oil production)
- Pressure boosting/testing (test stands, laboratory equipment)
- Hot water (boiler feed water, sterilisation sluices)

For more information, see product information:

- [High-pressure technology](#)



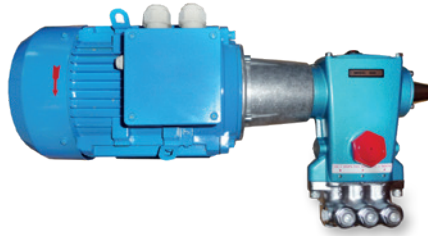
# COMPLETE SOLUTIONS

## FOR HIGH-PRESSURE APPLICATIONS

The high-pressure technology that we provide covers a wide range of applications, and, of course, we want to provide solutions that are ideally suited to our customers' requirements.

### PUMPS – MOTORS – UNITS

The basic configuration, on which all further units are developed, consists of a motor and a robust and durable pump. This unit can be assembled or fixed by the customer as required.



### UNITS WITHOUT CONTROL SYSTEM

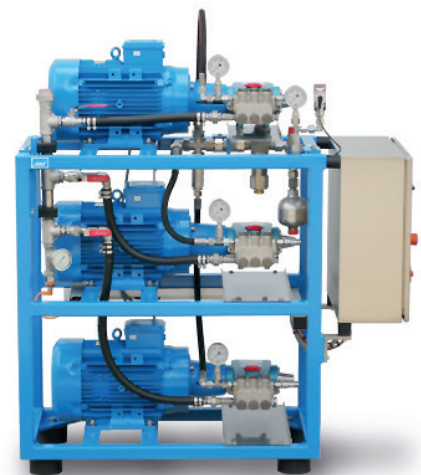
Adding a frame to the pump motor unit makes it easy to set up the unit. Thanks to the modular principle, it is possible to arrange several units into a space-saving combination.



### UNITS WITH CONTROL SYSTEM

Expansion of the unit in the (cube) frame by a control system enables demand-orientated control. This control ensures that the required performance is achieved with minimum energy and water consumption, while ensuring a high degree of efficiency and a long service life.

Depending on customer requirements, this unit can be supplied with frequency control or cascade control.



”

*All our pump systems can also be supplied in accordance with ATEX! Our pumps can be delivered with FDA-compliant seals for the food industry!*

“

# INDUSTRIAL HIGH-PRESSURE CLEANER

(STATIONARY OR MOBILE) SUITABLE FOR CONTINUOUS OPERATION

OPERATING RANGE 200 bar / 31 l/min

This unit has been designed for commercial use. The device is a compact model that is particularly space-saving and completely ready for connection with its integrated electrical control system. The high-pressure pump unit can be operated with either fresh water or service water.



## OPTIONS

- Operation without feeding pressure
- Dosing pump
- Mobile design

## DESCRIPTION OF FUNCTION

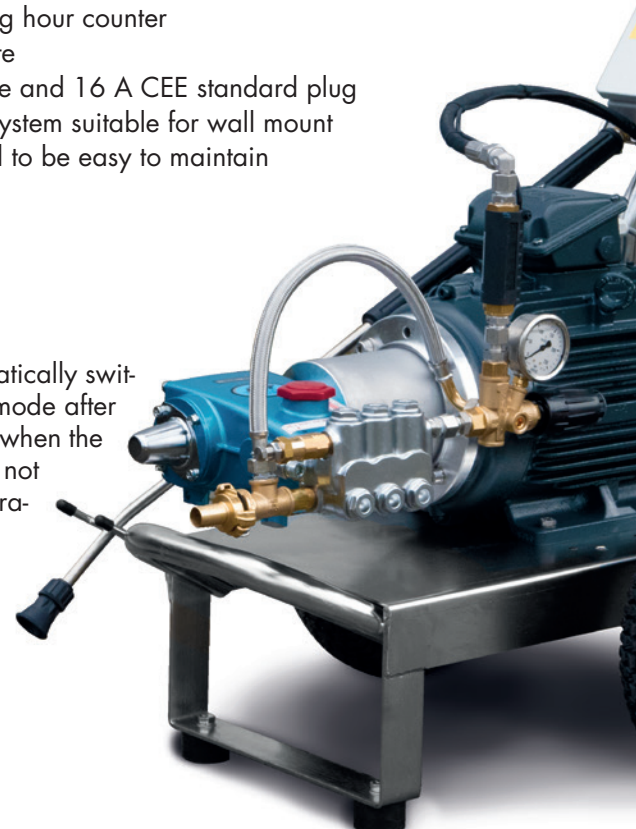
When the pressure drops (by actuating the spray gun), the device automatically switches on. When the spray gun is closed, the device switches to standby mode after a delay of 3 to 30 seconds (adjustable), and starts up again immediately when the spray gun is actuated. If the water supply is interrupted, the device will not switch on, thus safeguarding against dry running (does not apply to operating without feeding pressure).

## HIGH-PRESSURE PUMP

- Pump head corrosion-resistant brass, NiAlBr, stainless steel, duplex and other special materials
- Hard ceramic plunger (solid)
- Valves, valve seats and springs in stainless steel
- Seals made of special material
- Integrated leakage return
- Silent operation
- Cast aluminium crank housing
- Forged crankshaft made of CrMo steel

## DEVICE COMPONENTS

- Standard three-phase motor
- Circulation valve
- Manometer
- Flow monitor (for pump control and water inflow monitoring)
- Protective motor switch
- Operating hour counter
- Base plate
- 3 m cable and 16 A CEE standard plug
- Control system suitable for wall mount
- Designed to be easy to maintain



# ADDITIONAL OPTIONS

## HIGH-PRESSURE CLEANER

4



If required, we can also supply you with our high-quality mobile high-pressure cleaners. Also available in accordance with ATEX on request (both mobile and stationary)

- Operation without feeding pressure
- Dosing pump for detergent

Individual customer requirements can thus be fulfilled in combination with our extensive range of accessories.

### WE CAN OFFER:

- Spray nozzles & cleaning accessories
- Spray guns, spraying pipes & spray jet pipes
- High-pressure hoses
- Hose reels
- Valves, fittings & screw connections
- and much more.



# CUSTOMISED SOLUTIONS

## TANK WASHING HEAD, SPRAY NOZZLE, PUMP AND ASSEMBLY

– EVERYTHING FROM A SINGLE SOURCE!

### CLEANING OF TANKS AND TANKERS

Here, the combination of individually combinable high-pressure units with tank washing heads that are suitable for the respective requirements provides an **All-in-One solution** for the most diverse applications.



- Cleaning of tankers (lorries and rail)
- Tank cleaning
- Food and drinks industry
- Pharmaceutical and chemical industries
- Waste management

### ADVANTAGES

- Better cleaning results
- Reduced cleaning time
- Reduced water consumption
- Reduced use of chemicals

One huge advantage is the combination of robust high-pressure units designed for continuous operation; these are equipped with the required cleaning heads and the right dosing technology for the use of chemicals.

This allows us to develop and deliver a complete package that provides everything our customers require, from water tapping points to spray nozzles.

### EVAPORATIVE COOLING

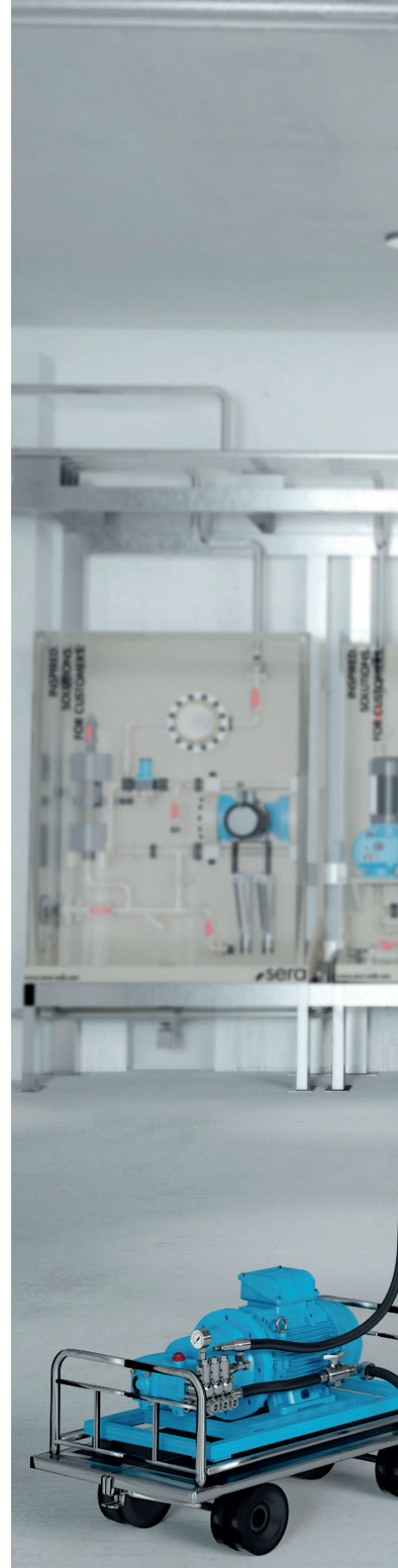
When one litre of water evaporates, it removes 630 W of heat energy from the ambient air. For evaporation to take place, very fine water droplets must be produced by means of a high-pressure atomisation process. Water atomised by high pressure evaporates 850 times faster because the water surface is increased by two million times. Enthalpy control atomises only as much water as the air can actually absorb.

- No water precipitation
- No condensate formation
- Everything stays dry!

We design these types of cooling systems individually according to the respective customer requirements, and manufacture them specifically for these requirements.

### The range of application for these units includes:

- Adiabatic industrial cooling
- Condensation cooling
- Ambient air cooling
- Atomisation units
- and much more.





## CUSTOMISED MADE-TO-ORDER PRODUCTION

However, our options and applications cover more than the above-mentioned areas – we also offer customised products. In other words:

”

*We manufacture units or complete systems entirely according to your requirements!*

“

## SAMPLE APPLICATIONS

- Washing systems
- Reverse osmosis
- Chemical processes
- Water hydraulics
- Food processing
- and much more.

**You have the option of determining how the different units are to be arranged, and also the type of power transmission:**

- Direct drive (with pump carrier)
- Gear boxes
- Belt drives

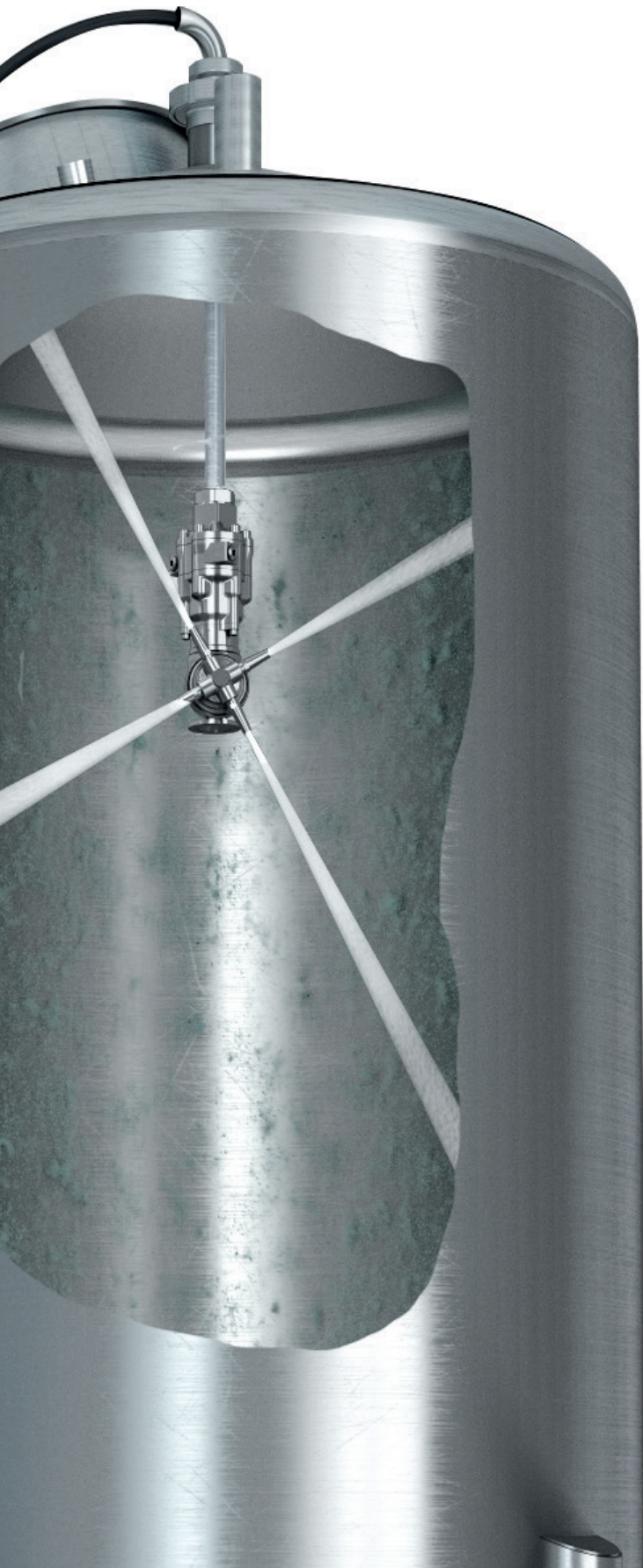
Of course, you also have the option of developing a complete solution according to your individual preferences and requirements.

Thanks to our extensive expertise in both high-pressure technology and dosing technology, we offer the option of an **All-in-One solution** individually adapted to your requirements – **and all this from a single source!**



# NOZZLE TECHNOLOGY

## HIGH-QUALITY SPRAY NOZZLE HEADS AND TANK WASHING HEADS



### YOUR CONTACT FOR ENGINEERING SERVICES

We are a reliable partner, offering high-quality spray nozzles and tank washing heads; we are your professional contact for engineering services.

Coordination of the individual components, from the pump to the nozzle, is extremely important in terms of process technology. We provide complete pump-spray nozzle solutions and deliver everything from a single source thanks to our own control system design. Every system undergoes a 100 % check on the test stand and a functional test. We supply replacement nozzles for all reputable nozzle manufacturers and guarantee perfect operation of the existing system.

### SAMPLE APPLICATIONS

The high quality of the materials guarantees long-term, operationally reliable use. The right material is available to meet every need.

- Steel industry
- Food industry
- Drinks industry
- Pharmaceutical industry
- Chemical industry
- Paper and cellulose industry
- Oil, gas and petrochemicals
- (Exhaust) gas scrubbing and cleaning
- Surface technology
- Dust control
- Emissions protection
- (Waste) water treatment
- Agricultural industry
- Textile and leather industries
- Mining



## PRODUCT RANGE

### FULL CONE NOZZLES

- Two-piece spray nozzles
- Grooved rim
- Flange socket
- S insert
- Without insert – off-line
- X insert / round steel / two-piece or three-piece / high flow values
- X insert / square spray pattern / two-part or three-part
- X insert / small spray angle – injection nozzles

### TANK CLEANING NOZZLES/TANK WASHING HEADS

- Fixed spray heads
- Single-axis heads – reaction drive
- Single-axis heads – motor drive
- Small washing heads
- Positive drive
- High pressure with external drive
- Low-pressure and high-pressure turbine models
- Testing/evaluation of the cleaning quality

### VENTURI NOZZLES

- Venturi nozzles/mixing injectors

### AIR NOZZLES

- Blowing nozzles
- Blowing strips

### HIGH-PRESSURE NOZZLES

### FULL JET NOZZLES

- Low-pressure and high pressure full jet nozzles

### PNEUMATIC ATOMISER NOZZLES

- Ultrasonic atomiser
- Conventional atomiser

### HOLLOW CONE NOZZLES

- Turbulence nozzles, tangential
- Turbulence nozzles, axial, row spraying
- Impact nozzles, axial, row spraying

### FLAT SPRAY NOZZLES

- Full spray nozzles/flat spray nozzles

### SPRAYING PIPES/NOZZLE BARS



# REPARATION TANKS AND STORAGE TANKS

## THE RIGHT TANK FOR TASK

### OPERATING RANGE up to max. 30,000 litres

Liquid chemicals have become indispensable in many industrial applications and are dosed safely and precisely with **sera** dosing technology. These chemicals must also be stored safely – in many countries in accordance with legal requirements.



**sera** preparation tanks and storage tanks ensure both safe and cost-effective storage of a wide range of different chemicals.

Using preparation and storage containers can minimise costs, because chemicals can be procured at a time when they are particularly cheap on the market. These generally cheaper chemicals (in powder or pellet form) can thus be stored safely and, when required, be fed to the preparation system in the correct ratio and in the required quantity.

#### ADVANTAGES AT A GLANCE

- Safe storage of chemicals of all kinds
- Saves costs during operation
- Preparation of chemicals from solids
- The right tank for any task
- Customised solutions available

#### SAMPLE APPLICATIONS

- Wastewater treatment
- Paper manufacturing
- Drinking water treatment
- Chemical industry
- Process water treatment
- Power stations
- Shipbuilding
- and much more.

PREPARATION

TANKS AND

STORAGE TANKS

## VERSIONS

### MATERIALS

The tanks are usually made from HDPE and PP. The plates are processed by welding and extrusion in accordance with the German DVS standard.

### STANDARD

The range includes very small 40 l tanks through to large 30,000 l tanks. **sera** dosing pumps complete the range and ensure that each chemical is dosed precisely depending on the respective application.

### OPTIONS

The standard tanks produced by **sera** are available with various options that can be selected according to the requirements of the respective project and customer. In addition, **sera** also designs preparation tanks and storage tanks for specific customer or project requirements.

Among other things, the following options are available:

- Sloping ground
- Cylindrical cover
- Agitator
- Water supply unit
- Inspection access
- Entrance opening
- Optical liquid level sensor
- Fill level sensors
- Control cabinet with automatic mode





# EFFICIENT SERVICE

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From planning, via commissioning of systems, through to a fast and straightforward worldwide device replacement service, **sera** offers support in all project phases. Our aim is to ensure that our customers continue to achieve the production results they are looking for with our systems, dosing units and pumps after commissioning is complete. High availability of the system with minimal system downtimes is essential to ensure this. To this end, **sera** offers a wide range of services, from technical support, via a spare parts service, to a repair service.

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#### Servicing & maintenance service

**sera** systems are serviced and maintained by experienced service technicians in order to avoid shutdowns. We offer an extensive range of service contracts, tailored to customer requirements. Early detection of possible causes of faults allows unexpected system shutdowns to be eliminated almost completely.

#### Technical support

Whether you have questions relating to **sera** products, need help with system design or a solution for a specific requirement – our experienced, well-qualified **sera** service team will be happy to help.

#### Customer training

**sera** training courses are held at **sera's** headquarters in Immenhausen, in our sales and service unit in Passau or, on request, on our customers' premises, and can be customer or application-based. You can find specific information about the current course dates in the Service section of our website.

#### Assembly & commissioning

Our trained **sera** service technicians are available for assembly and commissioning work. On request, the assembly can also be carried out by the customer's technical personnel under the guidance of a **sera** service technician. In this way, the customer's technical staff become familiar with handling the new system in a very short time.

#### Spare parts & repair service

Quality, ease of servicing and durability can be taken for granted with our products. But if a spare or replacement part is needed, our spare parts service can deliver the part required quickly, as we have the majority of our spare parts in stock. If the entire pump is defective, it can either be sent for repair or a qualified **sera** service technician will come to you and repair it on site.

#### Servicing of pumps

Our experienced, well-qualified **sera** service team will be happy to help.

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[www.sera-web.com](http://www.sera-web.com)

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