PRODUCTINFORMATION

5-SERIES MODEL
PISTON DIAPHRAGM PUMPS

INSPIRED. SOLUTIONS. FOR CUSTOMERS.

PISTON DIAPHRAGM PUMPS
THE ALLROUNDER FOR THE INDUSTRY

The **sera** piston diaphragm pumps 509.1 KM transmit the stroke movement of the mechanically controlled piston hydraulically to the multi-layer diaphragm. An integrated compensating valve ensures an excellent dosing accuracy and an optimum overload protection. The flow rate can be adjusted via the stroke length by means of a variable eccentric. The flow rate is also adjustable via a speed control using an external frequency converter.

AREAS OF APPLICATION

- Oil & gas industry
- Refineries
- Petrochemical industry
- Chemical industry
- Power plants
- Energy technology
- Pharmaceutical & cosmetics industry

AUTOMATIC FLOW RATE ADJUSTMENT

- Three-phase motors suitable for frequency converter operation for change of the stroke frequency via an external frequency converter
- Actuators with position regulators for automatic stroke length adjustment

OVERVIEW OF THE BENEFITS

- High dosing accuracy
- Counter pressure up to 300 bar
- Overload protection by an integrated hydraulic valve
- High process reliability by the multi-layer diaphragm
- Display of the diaphragm condition by an integrated diaphragm monitoring
- CE and EAC Conformity Certificate

OPTIONAL MODELS

- ATEX compliant design
- API 675 standard

MODELS

MATERIALS
The materials used are suitable for nearly all requirements and guarantee a safe continuous operation.

PUMP BODY AND VALVES
1.4571

VALVE BALLS
1.4401

VALVE SEALS
FEP-covered

DRIVE DIAPHRAGM
PTFE (3 layers)

DRIVE
The corresponding drive unit consists of a proven motor model coupled with a stroke mechanism in a robust housing.
The **sera** housings satisfy even the most demanding conditions. Material thickness and the surface treatment also withstand chemical affects.

REGULATIONS
The flow rate is constant or continuously adjustable.

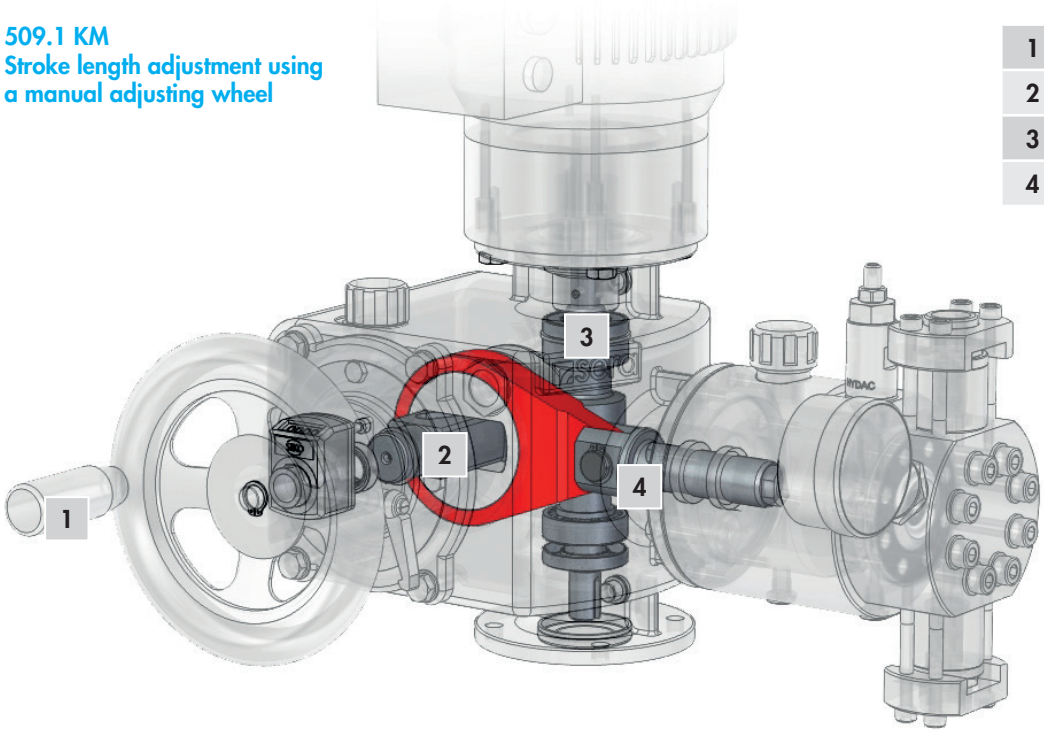
Manual adjustment of the flow rate by:
- stroke length adjustment using a variable eccentric
- reproducibility +/- 1% at 10 - 100% stroke length

automatic flow rate adjustment, dependent on the analogue input signals, by:
- three-phase motors suitable for frequency converter operation for change of the stroke frequency via an external frequency converter
- actuators with position regulators for automatic stroke length adjustment

SPECIAL MODELS
We offer individual solutions for special dosing requirements: Duplex or triplex models

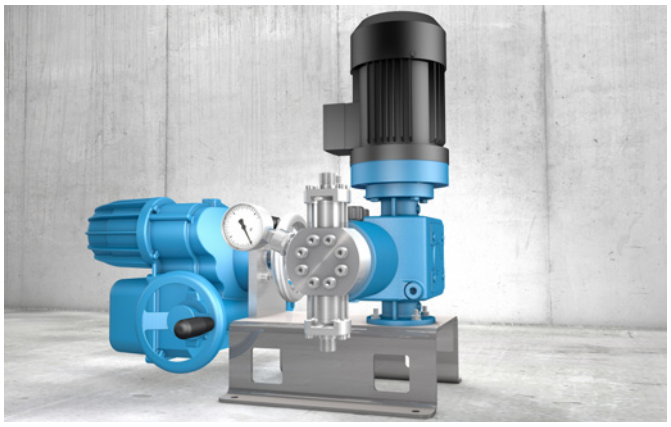
ACCESSORIES
To ensure an optimum installation of the dosing pumps, all accessories required such as pressure relief valves, pressure keeping valves, pulsation dampers, dosing valves, dosing tanks, flow monitors etc. can be ordered from us.

509.1 KM
Stroke length adjustment using a manual adjusting wheel



1	Adjusting wheel
2	Eccentric shaft
3	Drive shaft
4	Piston

ADDITIONAL FEATURES

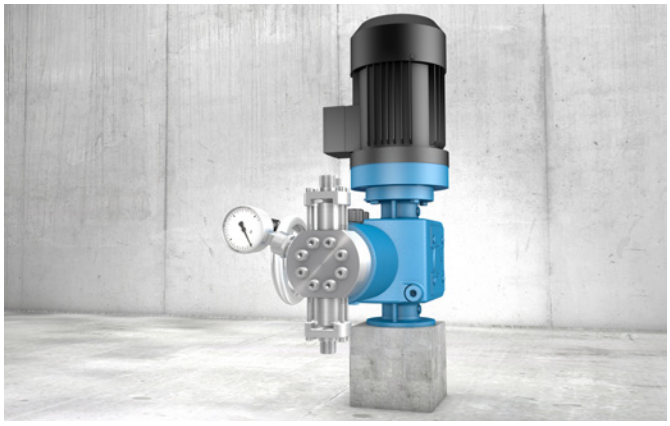


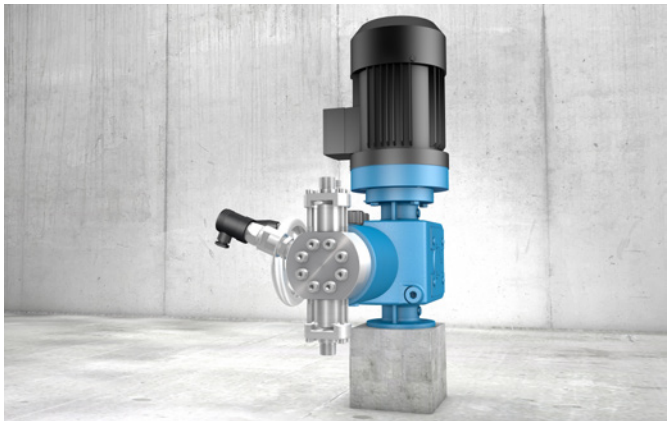
ELECTRIC ACTUATOR FOR STROKE LENGTH ADJUSTMENT

The electric actuator for stroke length adjustment enables an automatic setting via a control unit so that a manual setting is no longer required. Dependent on the flow rate desired the actuator turns the variable eccentric in and out.

DIAPHRAGM MONITORING

In case of damage of the working diaphragm, the medium under pressure flows through a bore to the signal manometer and causes a pointer deflection (optical diaphragm monitoring). If the diaphragm is monitored by a pressure switch the switch sends a signal in case of a diaphragm damage.



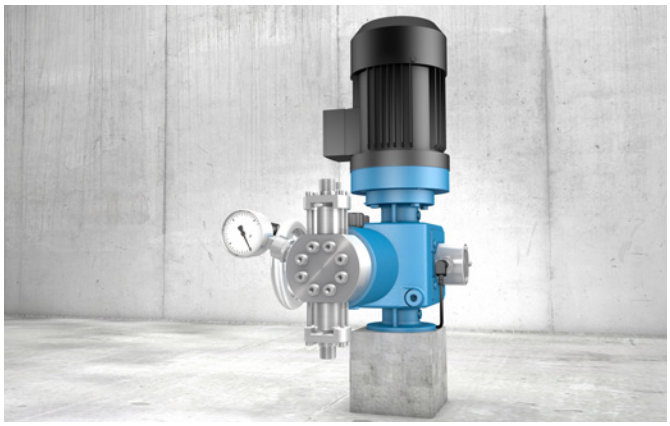


MULTI-LAYER DIAPHRAGM

If the working diaphragm is damaged impeccable tightness of the system is ensured due to the design of the multi-layer diaphragm with diaphragm monitoring. The damage of the working diaphragm does not cause a direct failure of the dosing pump.

STROKE FREQUENCY TRANSMITTER

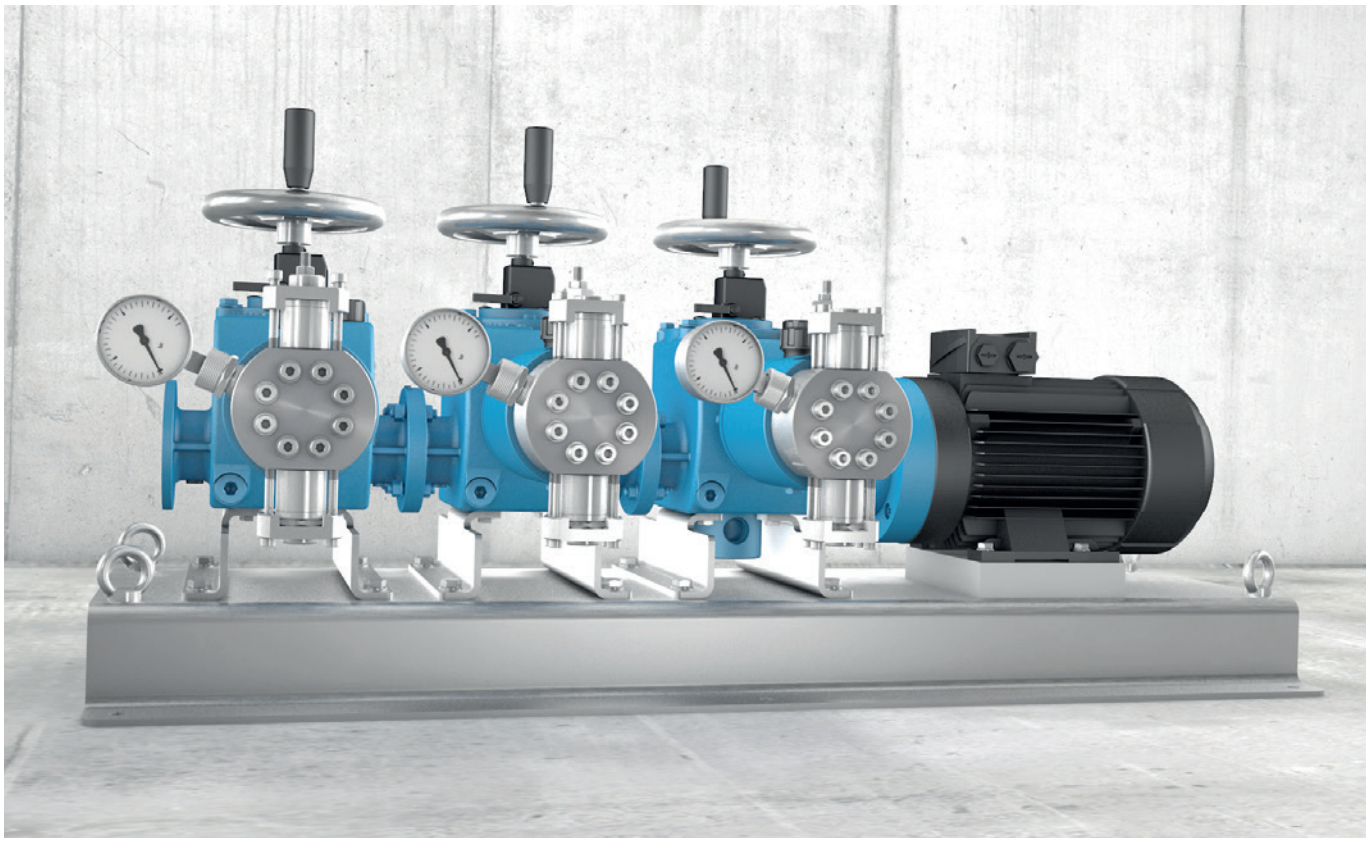
sera dosing pumps are oscillating displacement pumps with an exactly defined stroke volume per each pump stroke. The stroke frequency transmitter records the individual pump strokes and reports each individual stroke to an evaluation unit.



CUSTOMER-ORIENTED MODULAR DESIGN

MODULAR DESIGN BY ADAPTATION OF PUMP HEADS OR COMBINATION OF THE DRIVE HOUSINGS

- Solutions for various process requirements
- Duplex or triplex design on the basis of individual elements
- Combination of different sizes possible
- Suitable for dosing of mixtures
- Optimum adaptation to room conditions
- Low pulsation due to overlaid partial currents

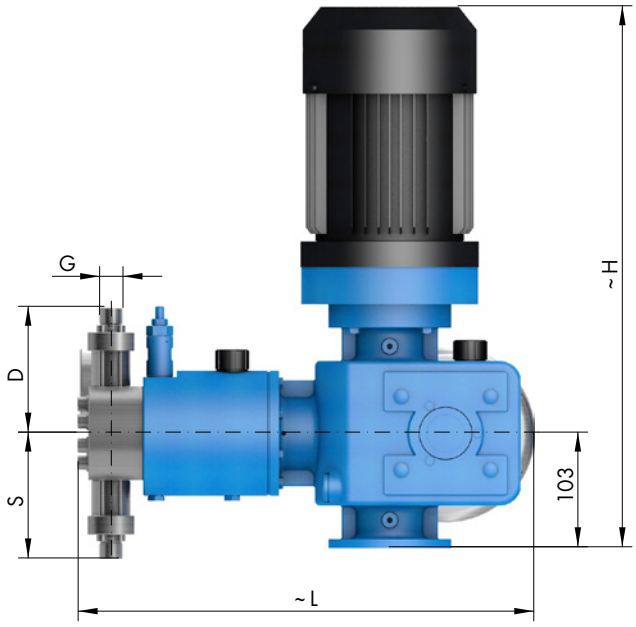


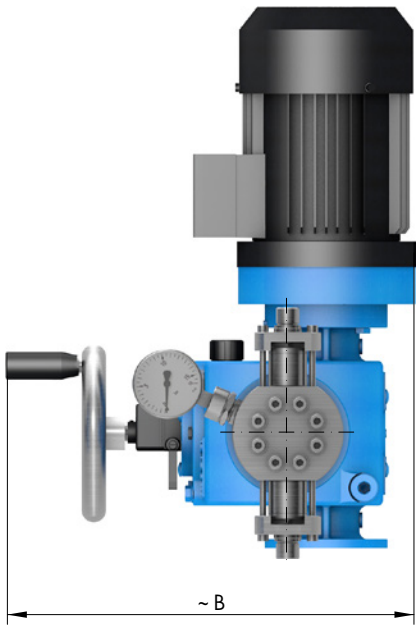
TECHNICAL DATA

PUMP DATA			RF 509.1-...			
			...6,5 KM	...18 KM	...28 KM	...74 KM
Permissible pressure $p_{2max.}$ at the pump outlet	bar		300	250	125	60
Nominal capacity QN at $p_{2max.}$	l/h	50 Hz	0-6,5	0-18	0-28	0-74
		60 Hz	0-8	0-22	0-34	0-89
Quantity per stroke	ml/stroke	(100%)	1,10	2,47	4,40	8,62
Max. suction height	mWC		2	2	3	3
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,2/0	-0,2/0	-0,3/0	-0,3/0
Recommended nominal diameter DN of the connecting pipes	mm		4	4	8	8
Nominal stroke frequency	1/min	50 Hz	168	168	168	168
		60 Hz	202	202	202	202
Weight approx.	kg		43	43	50	50

ELECTRICAL DATA		RF 509.1-... KM
Power consumption	kW	0,55
Voltage	V	230/400V 50Hz, 460V 60Hz
Frequency	Hz	50/60
Frequency control	Hz	30 - 60
Insulation class	ISO	F
Enclosure	F	55

DIMENSIONS





			RF 509.1-...			
SUCTION VALVES [1]			**...6,5 KM**	**...18 KM**	**...28 KM**	**...78 KM**
DN	Nominal width		4	4	8	8
G	Connection thread		G½	G½	G½	G½
S	Single valves	1.4571	–	–	132	132
S	Double valves	1.4571	114	114	–	–
PRESSURE VALVES [1]						
DN	Nominal width		4	4	8	8
G	Connection thread		G½	G½	G½	G½
D	Single valves	1.4571	–	–	132	132
D	Double valves	1.4571	114	114	–	–
MAX. TOTAL HEIGHT						
H			490	490	490	490
MAX. TOTAL WIDTH						
B			370	370	370	370
MAX. TOTAL LENGTH						
L			415	415	465	465

(Measurements in mm) [1] Basic design

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