

# SERIES 4 DIAPHRAGM PUMPS



# DIAPHRAGM PUMPS - ALLROUNDERS

**sera** diaphragm pumps are oscillating displacement pumps for dosing liquids. The medium to be pumped is separated from the drive by a diaphragm. This is thus protected from damaging influences of the medium.

They are used everywhere where leak-free and exact dosing is important, such as for aggressive, odorous, abrasive, radioactive, flammable, viscous or toxic media.

Delivery rate adjustment by means of stroke frequency adjustment using external frequency converter and manual stroke length adjustment for optimal adaptation to every requirement.

## APPLICATIONS

- Beverage industry
- Food industry
- Manufacture of paints and varnishes
- Power plants
- Water treatment
- Shipbuilding
- Electroplating
- Textile industry
- Waste water treatment

## AUTOMATIC DELIVERY RATE ADJUSTMENT

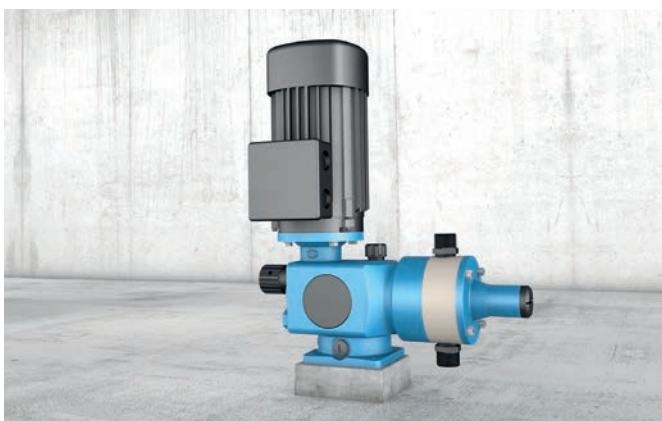
- Three-phase motors suitable for frequency converter operation for stroke frequency change using an external frequency converter
- Actuators with position controllers for automatic stroke length change

## OVERVIEW OF ADVANTAGES

- High dosing accuracy
- Long diaphragm service lives
- Linear control characteristics
- Leak-free
- Low-maintenance
- ATEX-compliant versions are available (not in stock)
- Unlimited dry running safety

## OPTIONAL VERSIONS

- Diaphragm monitoring
- Suction height 8 mWC
- Controllable variant (C version)



# VERSIONS

## MATERIALS

The high quality of the materials guarantees reliable continuous operation. The optimum material is available for every requirement.

## PUMP BODY AND VALVES

PVC, PP, PVDF, PP-GFP, PVDF-GFP, 1.4571

## VALVE BALLS

PTFE, 1.4401

## VALVE SEALS

EPDM, FPM, FEP-coated

## DRIVE DIAPHRAGMS

PTFE-coated

## MANUAL VENTILATION VALVE (2,4e)

PP-GFP, PVDF-GFP

## DRIVE

The drive unit in each case consists of a proven motor make, coupled with stroke gearing in a robust case.

**sera** cases are also suitable for the harshest operating conditions. Material thickness and surface treatment even resist chemical attacks.

The flow rate is constant or continuously adjustable. This is done manually by changing the stroke length for the controllable version. The delivery rate can be adjusted automatically using the following options:

- Three-phase motors suitable for frequency converter operation for stroke frequency change using an external frequency converter
- Actuators with position controllers for automatic stroke length change

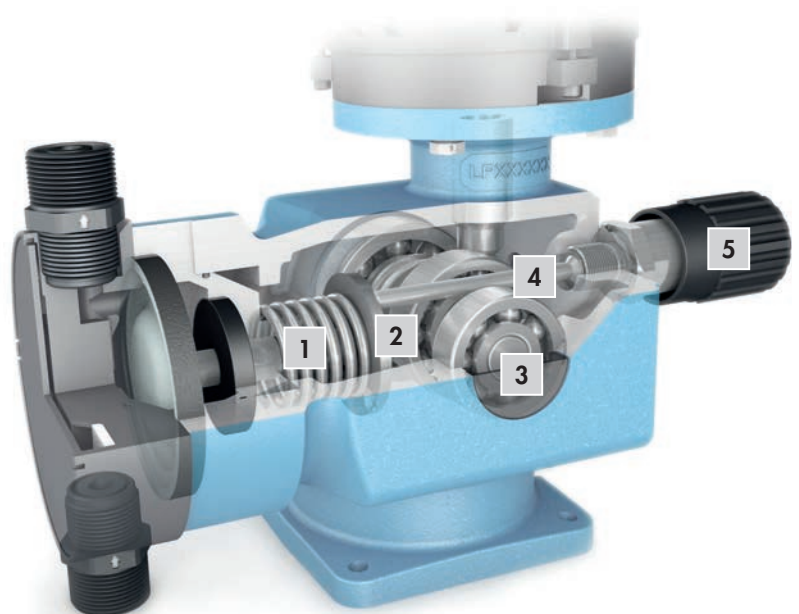
## SPECIAL VERSIONS

We provide the individual solution for special dosing tasks:

Among other things, pump bodies with special nominal diameters, heating equipment, valves as double valves, with spring loading, with elastic ball seats, rinsing equipment for interval or final rinsing for prevention of deposits in the pump body, attachment of stroke counter, diaphragm rupture monitoring, special materials such as titanium or Hastelloy, design that can be cleaned.

## ACCESSORIES

All necessary accessory parts for the optimal installation of dosing pumps such as pressure relief valves, pressure-maintaining valves, pulsation dampers, dosing valves, dosing tanks, flow monitors etc. can be ordered from us.



- |   |                   |
|---|-------------------|
| 1 | Return spring     |
| 2 | Push rod plate    |
| 3 | Eccentric shaft   |
| 4 | Adjusting spindle |
| 5 | Adjusting wheel   |



# ADDITIONAL FEATURES



## CONTROL ELECTRONICS

The control electronics have many advantages such as the possibility of external control using pulse or analogue signals, batch control or continuous monitoring of the diaphragm state, the flow rate and tank level.

## PROFIBUS DP INTERFACE

**sera** dosing pumps can optionally be equipped with a control unit. The pumps of the 410.2 series keep the current C-electronics, while the new 409.2 is equipped with the innovative Pro+ board. Its design allows the later addition of a separately available bus interface. The C-electronic is available in two different executions.



## PROFINET INTERFACE

The control electronics of the 409.2 Pro+ series can be extended using a ProfiNet INTERFACE MODULE. This is connected directly to the electronics and provides the possibility to integrate the dosing pump into a ProfiNet network. With two ProfiNet connections it can be integrated into both ring and tree structures.

## FREQUENCY CONVERTER

The speed and thus the delivery rate of the dosing pump can be regulated without control electronics using a frequency converter.



# ADDITIONAL FEATURES

## PUMP BODY WITH INTEGRATED PRESSURE RELIEF VALVE

The integrated diaphragm pressure relief valve protects the pump from unacceptable overpressure when the pressure pipe is closed. It can be used for low-viscosity media without solids for a maximum flow rate of 570 l/h.



## DIAPHRAGM MONITORING

The conductive diaphragm monitoring is performed using an electrode in combination with an evaluation unit. In the case of the controllable pumps, the electrode is directly connected to the control electronics and thus constantly monitored. In contrast, a relay is needed for the evaluation for the non-controllable pumps.

## STROKE FREQUENCY SENSOR

**sera** dosing pumps are oscillating displacement pumps with an exactly defined stroke volume for each pump stroke. The stroke frequency sensor records the individual pump strokes and forwards each individually to the evaluation unit.



## ELECTRIC ACTUATOR FOR STROKE LENGTH ADJUSTMENT

Using the electric actuator for stroke length adjustment, this can be automatically adjusted by a control unit and manual adjustment is no longer needed.





# INSPIRED. SOLUTIONS. FOR CUSTOMERS.

We offer individual solutions in dosing technology for our customers.  
For more information or material please contact your sera partner.  
Please visit [www.sera-web.com](http://www.sera-web.com) for our complete product range.

# CONTROL ELECTRONICS (OPTION)

## FUNCTIONS AND MODES OF OPERATION

- Manual operation
- Manual stroke frequency adjustment
- PROFIBUS DP-VO Slave interface (option)
- External START/STOP
- Pulse operation / fractinator
- Pulse memory
- Analogue operation (0/4 ... 20 mA)
- Analogue operation standardization
- Batch dosing (manual / with timer)
- 3 LEDs for status indication
- Multiline, illuminated display
- Menu-driven parameterization
- Flow indication
- Calibration function
- 4-key operation
- 2 digital outputs (PLC)
- 1 analogue output (PLC or contact signal)
- 2 analogue/digital inputs (reversible)
- 1 digital input
- Programmable input-/output functions
- Diaphragm monitoring
- Connection/evaluation: 2-stage level monitoring
- Connection/evaluation: Flow monitoring
- Connection/evaluation: Flow metering
- Voltage 210-250V, 50/60Hz
- 3m connection cable with Euro-plug

Operating Modes & Messaging	Pro	Pro+
Manual operation	✓	✓
Pulse operation	✓	✓
Analogue operation	✓	✓
Batch operation	✗	✓
Timer	✗	✓
Interface	✗	✓
Calibration	✓	✓
Suction mode	✓	✓
Diaphragm monitoring	✓	✓
Data logging (SD-Card)	✗	✓
Error messaging	Error Code + display color change	Plain text + display color change
Clock for data & time	✗	✓

Connection & Control	Pro	Pro+
Control elements & Display	4-button control Multilingual display 4-color status indicator	Removeable handheld with two buttons and clickwheel Display with 8 languages (de, en, es, fr, nl, cs, fi, tr) 4-color status indicator
Control cable	optional	5m control cable (8-pole)
In-/Output connection	✓	✓
Level connection	✓	✓
Flow monitor & measurement connection	✗	✓
Profibus/Profinet	✗	optional
Inputs	Digital pulse (NO/NC) Digital extern stop (NO/NC) Analogue 4-20mA	Digital/analogue, free parametrizable Digital/analogue, free parametrizable Digital, free parametrizable
Outputs	24V Ready to run (NO/NC) Stroke signal (NO/NC)	24V Digital, free parametrizable Digital, free parametrizable Analogue, free parametrizable
Updateable	USB (Stick)	USB (to host)

# TECHNICAL DATA

## DIAPHRAGM PUMP RF409.2 (<25 L/H)

PUMP DATA			RF 409.2-...					
(* 8mWS = performance losses of nominal capacity QN of 20-25%)			1,6e	2,4e	7,0e	12e	18e	25e
Permissible pressure $p_{2max}$ at the pump outlet	bar		10	10	10	10	10	10
Nominal capacity QN at $p_{2max}$	l/h	50 Hz	0-1,6	0-2,4	0-7,0	0-12	0-18	0-25
		60 Hz	0-1,9	0-2,9	0-8,4	0-14,4	0-21,5	0-30
Quantity per stroke	ml/stroke (100%)		0,27	0,27	0,78	2,0	3,0	2,8
Max. suction height	mWC		3					3 (8*)
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,3/0					-0,3/0 (-0,8/0*)
Recomm. nominal diameter DN of the connecting pipes	mm		5	5	5	10	10	10
Nominal stroke frequency	1/min	50 Hz	100	150	150	100	100	150
		60 Hz	120	180	180	120	120	180
Weight approx.	kg	plastic	9	9	9	9	9	9
		stainless steel	10	10	10	10	10	10

ELECTRICAL DATA		RF409.2-1,6e ... RF409.2-25e	
Power consumption	kW	0,18	
Voltage	V	230/400V 50Hz, 460V 60Hz	
Frequency	Hz	50/60	
Insulation class	ISO	F	
Enclosure	IP	55	



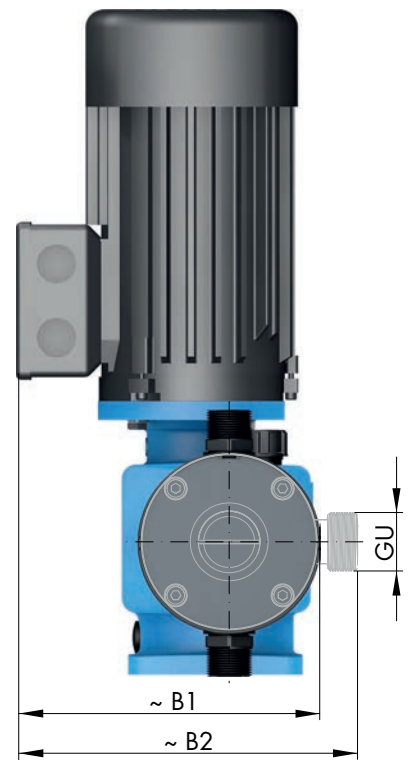
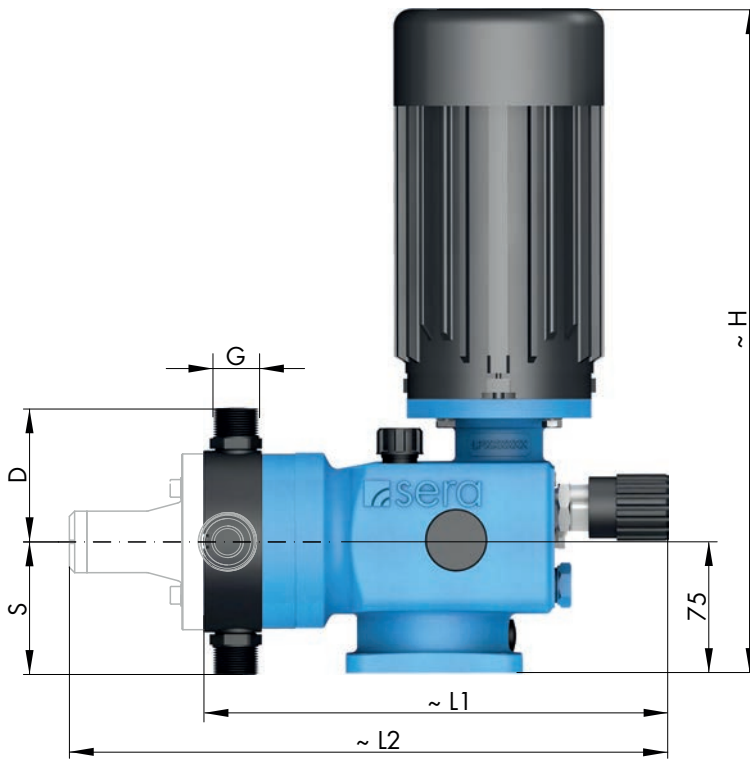
# TECHNICAL DATA

## DIAPHRAGM PUMP RF409.2 (>50 L/H)

PUMP DATA			RF 409.2-...							
(* 8mWS = performance losses of nominal capacity QN of 20-25%)			50e	75e	90e	115e	140e	180e	250e	350e
Permissible pressure $p_{2max}$ at the pump outlet	bar		10	10	8	4	8	4	3	3
Nominal capacity QN at $p_{2max}$	l/h	50 Hz	0-50	0-75	0-90	0-115	0-140	0-180	0-250	0-350
		60 Hz	0-60	0-90	0-108	0-138	0-168	0-216	0-300	0-420
Quantity per stroke	ml/stroke (100%)		8,3	8,3	15,0	19,2	15,6	20,0	41,7	38,9
Max. suction height	mWC		3 (8 *)						3	
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,3/0 (-0,8/0)						-0,3/0	
Recomm. nominal diameter DN of the connecting pipes	mm		10	15	15	15	15	15	15	15
Nominal stroke frequency	1/min	50 Hz	100	150	100	100	150	150	100	150
		60 Hz	120	180	120	120	180	180	120	–
Weight approx.	kg	plastic	9	9	11	10	11	10	13	13
		stainless steel	10	10	13	13	13	13	21	21

ELECTRICAL DATA		RF409.2-50e ... RF409.2-350e	
Power consumption	kW	0,37	
Voltage	V	230/400V 50Hz, 460V 60Hz	
Frequency	Hz	50/60	
Insulation class	ISO	F	
Enclosure	IP	55	

# DIMENSIONS



# DIMENSIONS

		RF 409.2-...													
SUCTION VALVES		...1,6e	...2,4e	...7,0e	...12e	...18e	...25e	...50e	...75e	...90e	...115e	...140e	...180e	...250e	...350e
<b>DN</b>	Nominal width	5	5	5	5	8	8	8	8	8	8	8	8	20 <sup>(1)</sup>	20 <sup>(1)</sup>
<b>G</b>	Connection thread	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>
<b>S</b>	PP-FRP / PVDF-FRP	80	80	56	56	56	56	69	69	76	76	76	76	122	122
<b>S</b>	PP-FRP / PVDF-FRP <sup>(2)</sup>	–	–	57	60	60	60	67	67	76	76	76	76	122	122
<b>S</b>	PVC-U	70	70	62	65	63	63	70	70	78	78	78	78	119	119
<b>S</b>	PVC-U <sup>(2)</sup>	–	–	52	52	63	63	70	70	78	78	78	78	119	119
<b>S</b>	1.4571	70	70	57	61	61	61	68	68	76	76	76	76	122	122
<b>S</b>	1.4571 <sup>(2)</sup>	–	–	57	61	61	61	68	68	76	76	76	76	122	122
<b>PRESSURE VALVES</b>															
<b>DN</b>	Nominal width	5	5	5	5	8	8	8	8	8	8	8	8	20 <sup>(1)</sup>	20 <sup>(1)</sup>
<b>G</b>	Connection thread	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>
<b>D</b>	PP-FRP / PVDF-FRP	80	80	64	64	64	64	69	69	76	76	76	76	122	122
<b>D</b>	PP-FRP / PVDF-FRP <sup>(2)</sup>	–	–	57	60	60	60	67	67	76	76	76	76	122	122
<b>D</b>	PVC-U	70	70	62	65	70	70	77	77	85	85	85	85	138	138
<b>D</b>	PVC-U <sup>(2)</sup>	–	–	65	65	70	70	77	77	85	85	85	85	138	138
<b>D</b>	1.4571	70	70	57	61	61	61	68	68	76	76	76	76	122	122
<b>D</b>	1.4571 <sup>(2)</sup>	–	–	57	61	61	61	68	68	76	76	76	76	122	122
<b>MAX. TOTAL HEIGHT</b>															
<b>H</b>		355	355	355	355	355	355	365	365	365	365	365	365	365	365
<b>MAX. TOTAL WIDTH</b>															
<b>B1</b>		170	170	170	170	170	170	185	185	185	185	185	185	220	220
<b>B2</b>	(with relief valve)	–	–	170	170	170	170	190	190	205	205	205	205	230	230
<b>MAX. TOTAL LENGTH</b>															
<b>L1</b>		310	310	285	285	285	285	295	295	300	300	300	300	355	355
<b>L2</b>	(with relief valve)	–	–	345	345	345	345	360	360	370	370	370	370	435	435
<b>RELIEF VALVE CONNECTION</b>															
<b>GU</b>		–	–	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G1	G1	G1	G1	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>	G1 <sup>1</sup> / <sub>4</sub> <sup>(1)</sup>

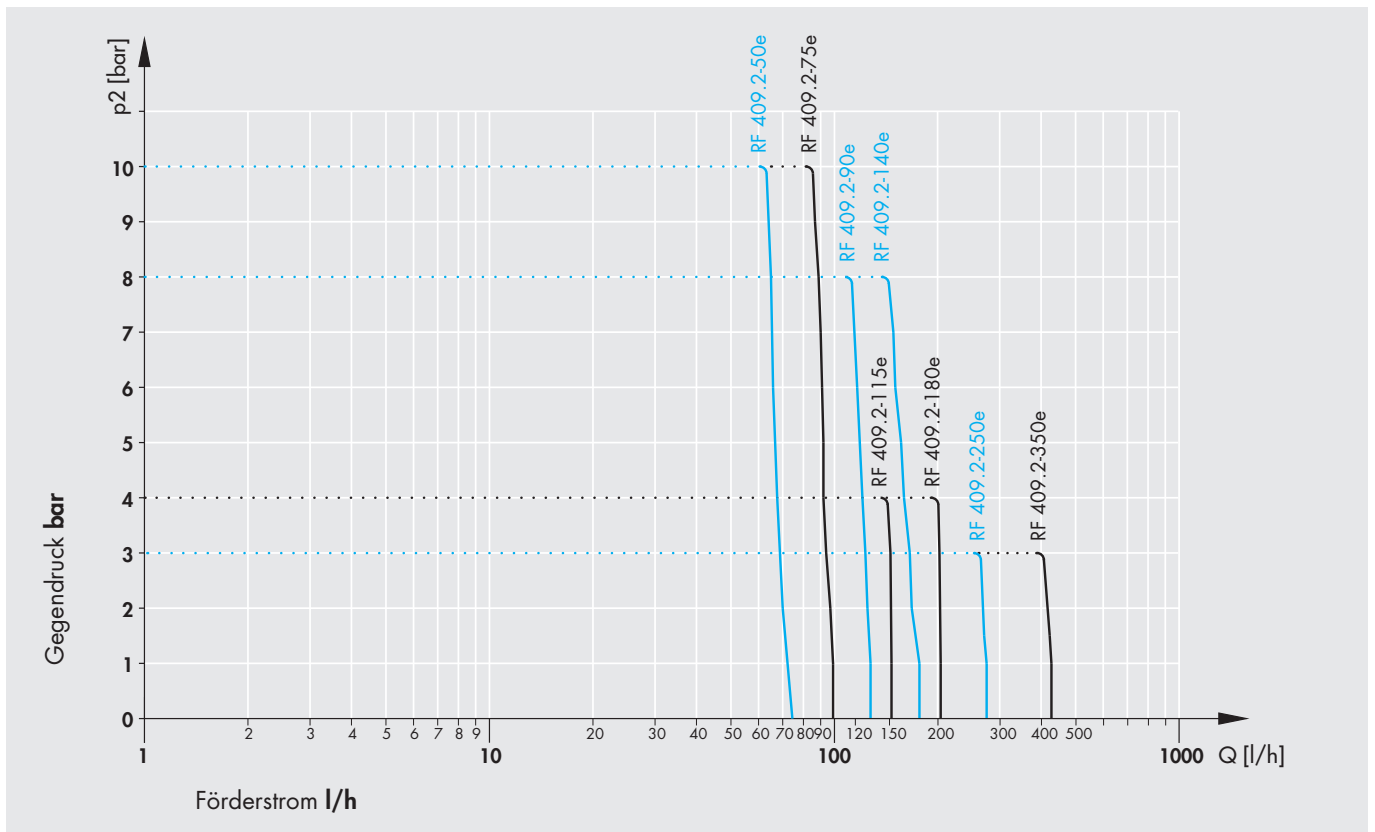
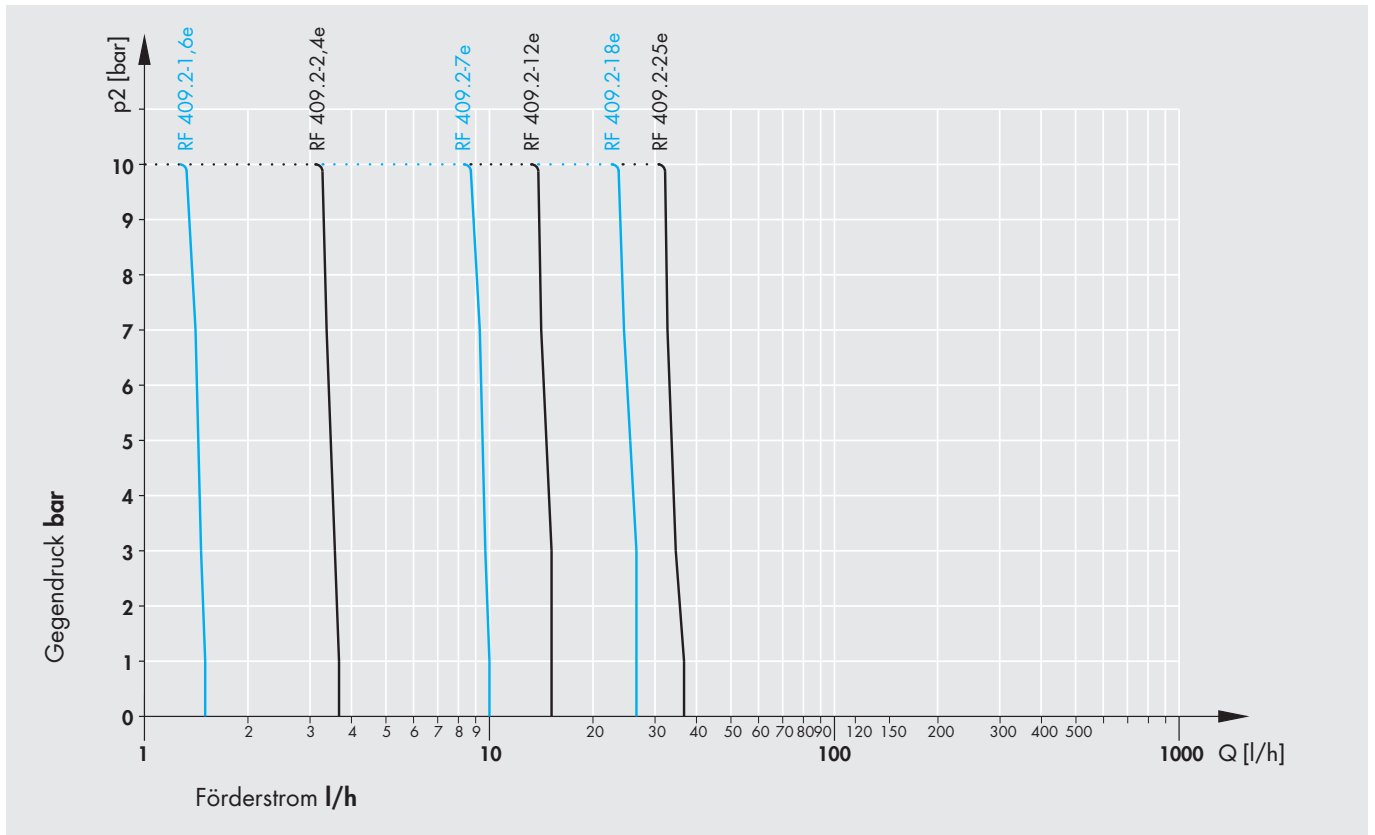
(Measurements in mm)

<sup>(1)</sup> DN15 / G1 at valves of PVC-U

<sup>(2)</sup> Pump body with relief valve

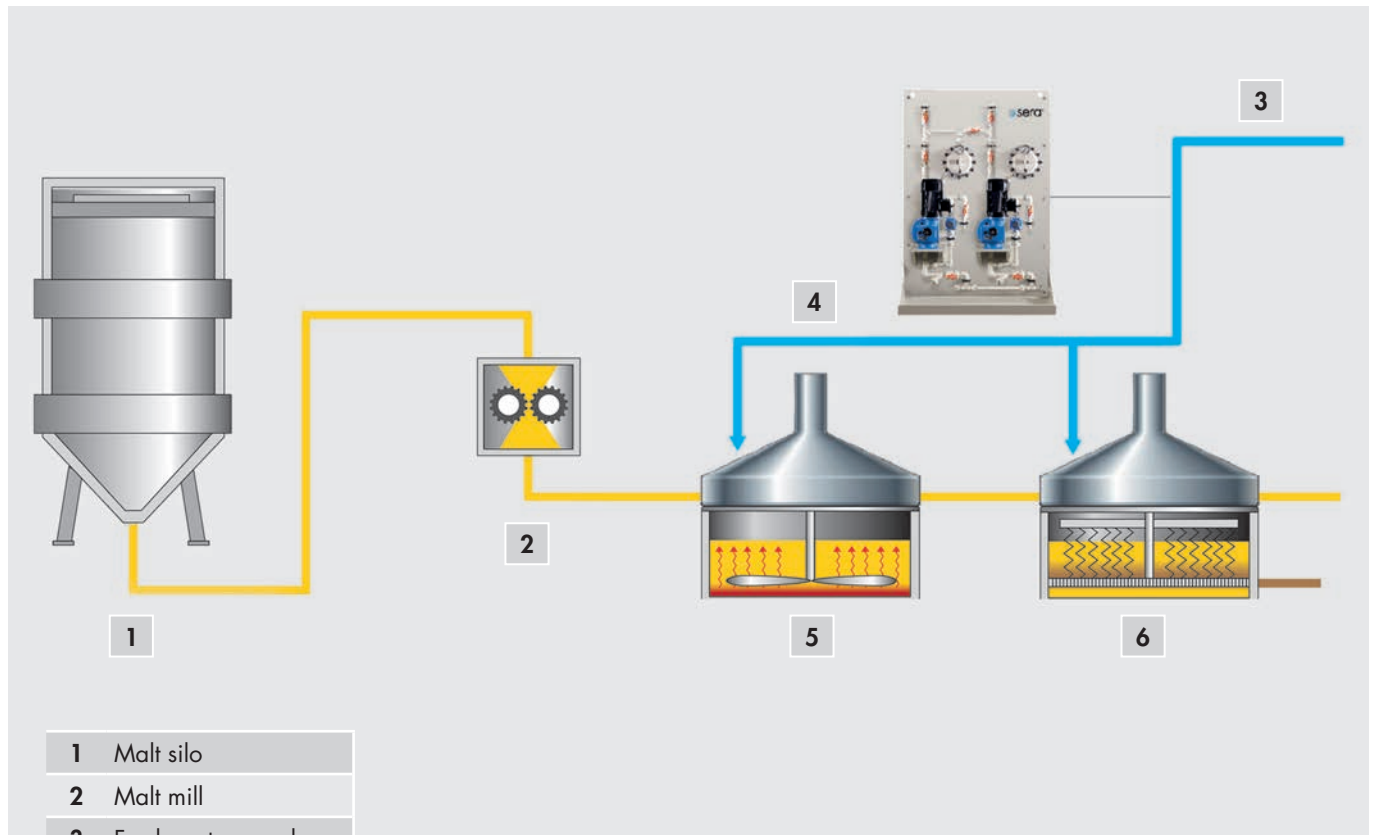


# CHARACTERISTIC CHARTS



# APPLICATION EXAMPLE

## HARDENING OF BREWING WATER



- 1 Malt silo
- 2 Malt mill
- 3 Fresh water supply
- 4 Water addition
- 5 Mash tun
- 6 Lauter tun



# TECHNICAL DATA

## DIAPHRAGM PUMP C409.2 PRO+ (<25 L/H)

PUMP DATA		C 409.2-... Pro/Pro+						
		1,6e	2,4e	7,0e	12e	18e	25e	
Permissible pressure $p_{2max}$ at the pump outlet	bar	10	10	10	10	10	10	
Nominal capacity QN at $p_{2max}$	l/h	50/60 Hz	0-1,6	0-2,4	0-7	0-12	0-18	0-25
Quantity per stroke	ml/stroke (100%)		0,27	0,27	0,78	2,0	3,0	3,0
Max. suction height	mWC		3					
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,3/0					
Recomm. nominal diameter DN of the connecting pipes	mm		10	10	10	10	10	10
Nominal stroke frequency	1/min	50/60 Hz	100	150	150	100	100	150
Weight approx.	kg	plastic	11	11	11	11	11	12,5
		stainless st.	13,5	13,5	13	13	13	13

ELECTRICAL DATA		C 409.2-1,6e Pro/Pro+ ... C 409.2-25e Pro/Pro+	
		230 V, 50/60 Hz	115 V, 50/60 Hz
Power consumption	kW	0,18	
Voltage	V	210 - 250	100 - 125
Frequency	Hz	50/60	
Inlet voltage, control input	V DC	5...30	
Minimum contact signal time	ms	55	
Analogue input resistance	$\Omega$	39	
Digital output internal/external supply		20V DC, 30mA /... 30V DC, 30mA	
Recommended fuse (circuit breaker)		C6A	C10A
Insulation class	ISO	F	
Enclosure	IP	55	



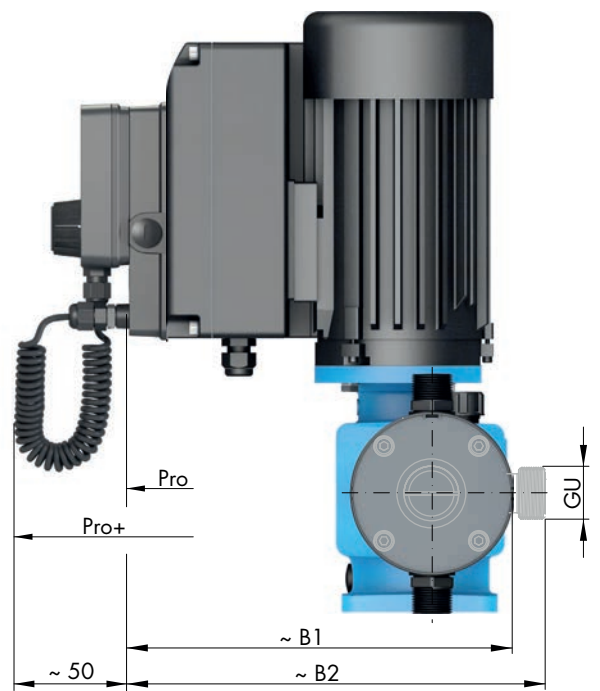
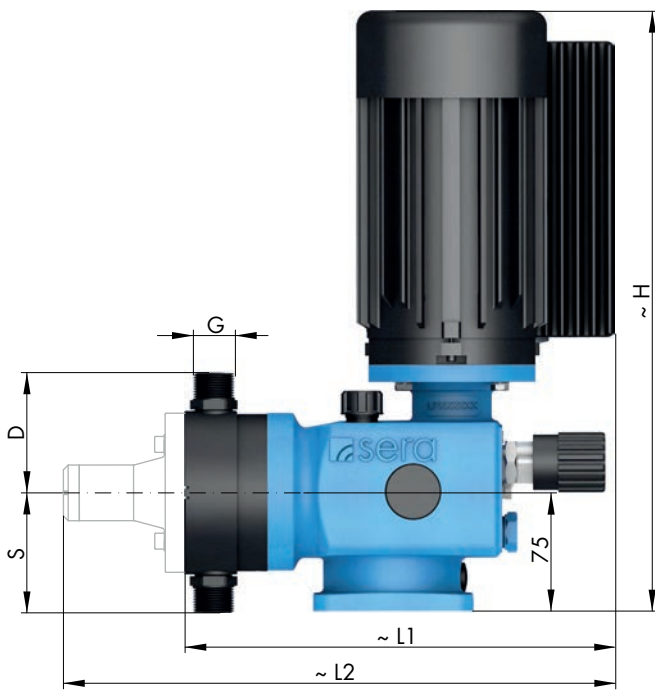
# TECHNICAL DATA

## DIAPHRAGM PUMP C409.2 PRO+ (>50 L/H)

PUMP DATA			C 409.2-... Pro/Pro+							
			50e	75e	90e	115e	140e	180e	250e	350e
(* 8mWS = performance losses of nominal capacity QN of 20-25%)										
Permissible pressure $p_{2max}$ at the pump outlet	bar		10	10	8	4	8	4	3	3
Nominal capacity QN at $p_{2max}$	l/h	50/60 Hz	0-50	0-75	0-90	0-115	0-140	0-180	0-250	0-350
Quantity per stroke	ml/stroke (100%)		8,3	8,3	15,0	19,2	15,6	20,0	41,7	38,9
Max. suction height	mWC				3	(8*)			3	
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$			-0,3/0	(-0,8/0*)			-0,3/0	
Recomm. nominal diameter DN of the connecting pipes	mm		15	15	15	15	15	15	15	15
Nominal stroke frequency	1/min	50/60 Hz	150	150	100	100	150	150	100	150
Weight approx.	kg	plastic	8,5	8,5	10,5	9,0	10,5	9,0	13,0	13,0
		stainless st.	14	16	16	16	16	16	24	24

ELECTRICAL DATA		C 409.2-50e Pro/Pro+ ... C 409.2-350e Pro/Pro+	
		230 V, 50/60 Hz	115 V, 50/60 Hz
Power consumption	kW	(...50e = 0,18 kW)	0,37
Voltage	V	210 - 250	100 - 125
Frequency	Hz		50/60
Inlet voltage, control input	V DC		5...30
Minimum contact signal time	ms		55
Analogue input resistance	$\Omega$		39
Digital output internal/external supply		20V DC, 30mA /... 30V DC, 30mA	
Recommended fuse (circuit breaker)		C6A	C10A
Insulation class	ISO		F
Enclosure	IP		55

# DIMENSIONS



# DIMENSIONS

		C 409.2-...													
		...1,6e	...2,4e	...7,0e	...12e	...18e	...25e	...50e	...75e	...90e	...115e	...140e	...180e	...250e	...350e
<b>SUCTION VALVES</b>															
<b>DN</b>	Nominal width	5	5	5	5	8	8	8	8	8	8	8	8	20 <sup>(1)</sup>	20 <sup>(1)</sup>
<b>G</b>	Connection thread	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G 1 1/4 <sup>(1)</sup>	G 1 1/4 <sup>(1)</sup>
<b>S</b>	PP-FRP / PVDF-FRP	80	80	56	56	56	56	69	69	76	76	76	76	122	122
<b>S</b>	PP-FRP / PVDF-FRP <sup>(2)</sup>	–	–	57	60	60	60	67	67	76	76	76	76	122	122
<b>S</b>	PVC-U	70	70	62	65	63	63	70	70	78	78	78	78	119	119
<b>S</b>	PVC-U <sup>(2)</sup>	–	–	52	52	63	63	70	70	78	78	78	78	119	119
<b>S</b>	1.4571	70	70	57	61	61	61	68	68	76	76	76	76	122	122
<b>S</b>	1.4571 <sup>(2)</sup>	–	–	57	61	61	61	68	68	76	76	76	76	122	122
<b>PRESSURE VALVES</b>															
<b>DN</b>	Nominal width	5	5	5	5	8	8	8	8	8	8	8	8	20 <sup>(1)</sup>	20 <sup>(1)</sup>
<b>G</b>	Connection thread	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G 1 1/4 <sup>(1)</sup>	G 1 1/4 <sup>(1)</sup>
<b>D</b>	PP-FRP / PVDF-FRP	80	80	64	64	64	64	69	69	76	76	76	76	122	122
<b>D</b>	PP-FRP / PVDF-FRP <sup>(2)</sup>	–	–	57	60	60	60	67	67	76	76	76	76	122	122
<b>D</b>	PVC-U	70	70	62	65	70	70	77	77	85	85	85	85	138	138
<b>D</b>	PVC-U <sup>(2)</sup>	–	–	65	65	70	70	77	77	85	85	85	85	138	138
<b>D</b>	1.4571	70	70	57	61	61	61	68	68	76	76	76	76	122	122
<b>D</b>	1.4571 <sup>(2)</sup>	–	–	57	61	61	61	68	68	76	76	76	76	122	122
<b>MAX. TOTAL HEIGHT</b>															
<b>H</b>		355	355	355	355	355	355	355	365	365	365	365	365	365	365
<b>MAX. TOTAL WIDTH</b>															
<b>B1</b>		250	250	250	250	250	250	250	260	260	260	260	260	295	295
<b>B2</b>	(with relief valve)	–	–	250	250	250	250	250	270	285	285	285	285	310	310
<b>MAX. TOTAL LENGTH</b>															
<b>L1</b>		310	310	285	285	285	285	295	295	300	300	300	300	355	355
<b>L2</b>	(with relief valve)	–	–	345	345	345	345	360	360	370	370	370	370	435	435
<b>RELIEF VALVE CONNECTION</b>															
<b>GU</b>		–	–	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>4</sub>	G1	G1	G1	G1	G 1 1/4 <sup>(1)</sup>	G 1 1/4 <sup>(1)</sup>

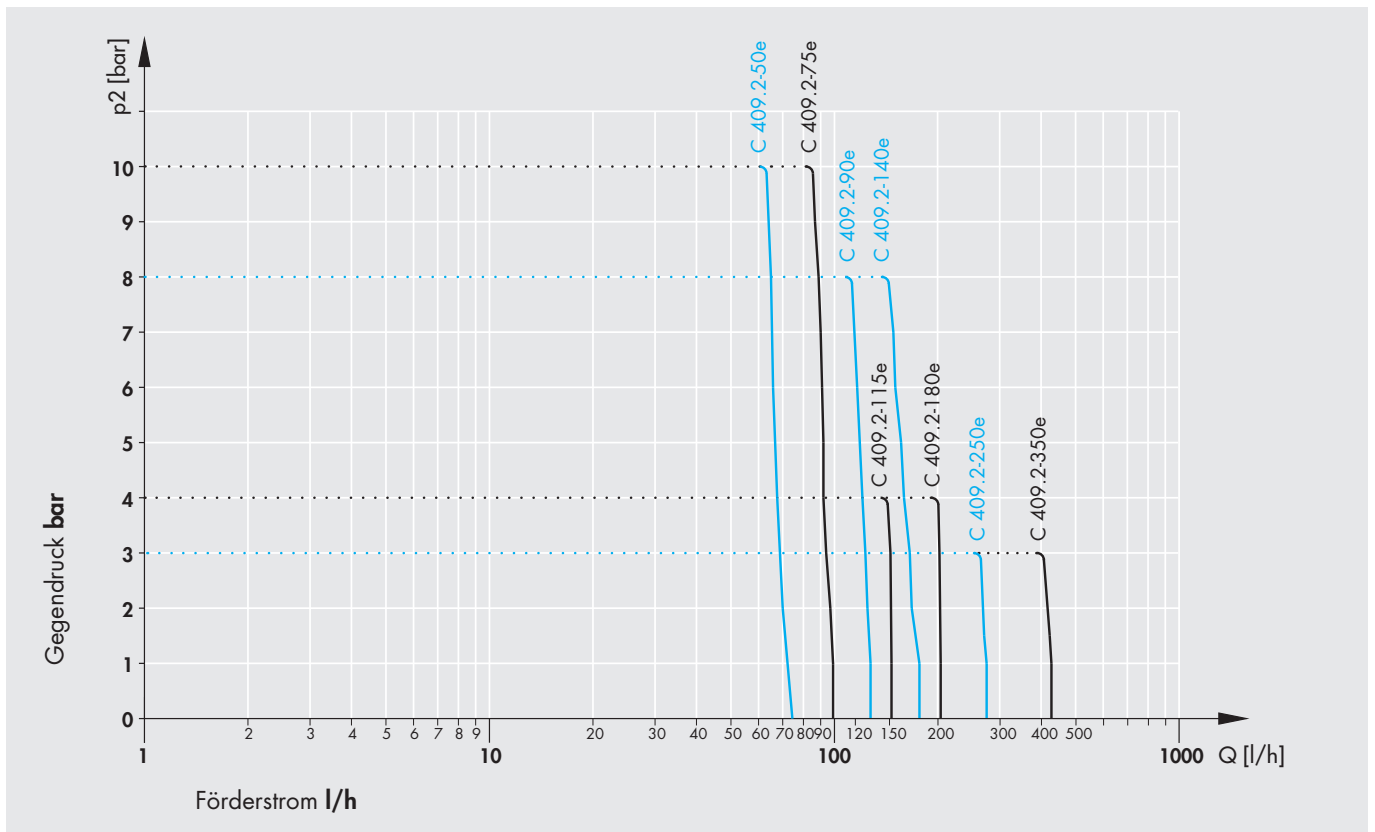
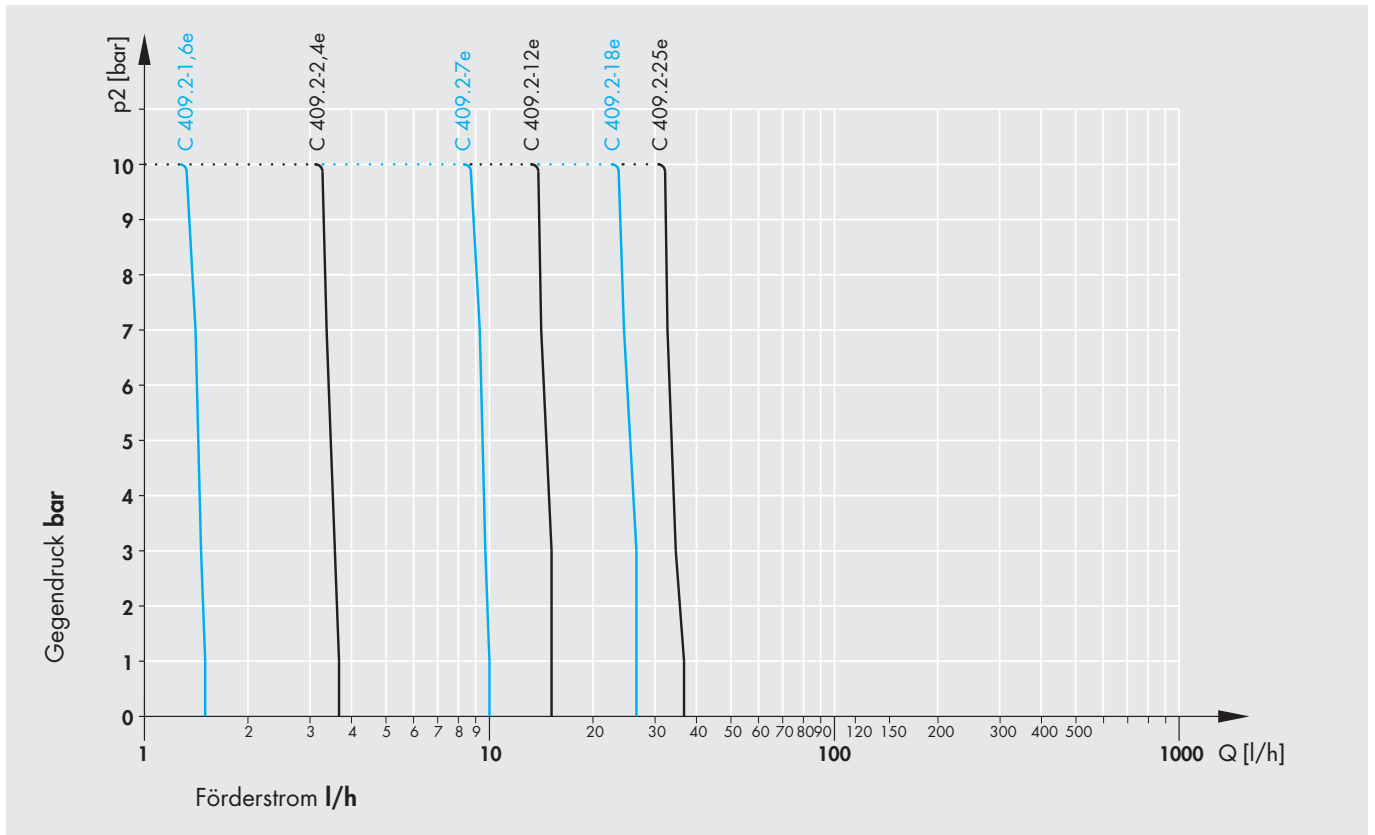
(Measurements in mm)

<sup>(1)</sup> DN15 / G1 at valves of PVC-U

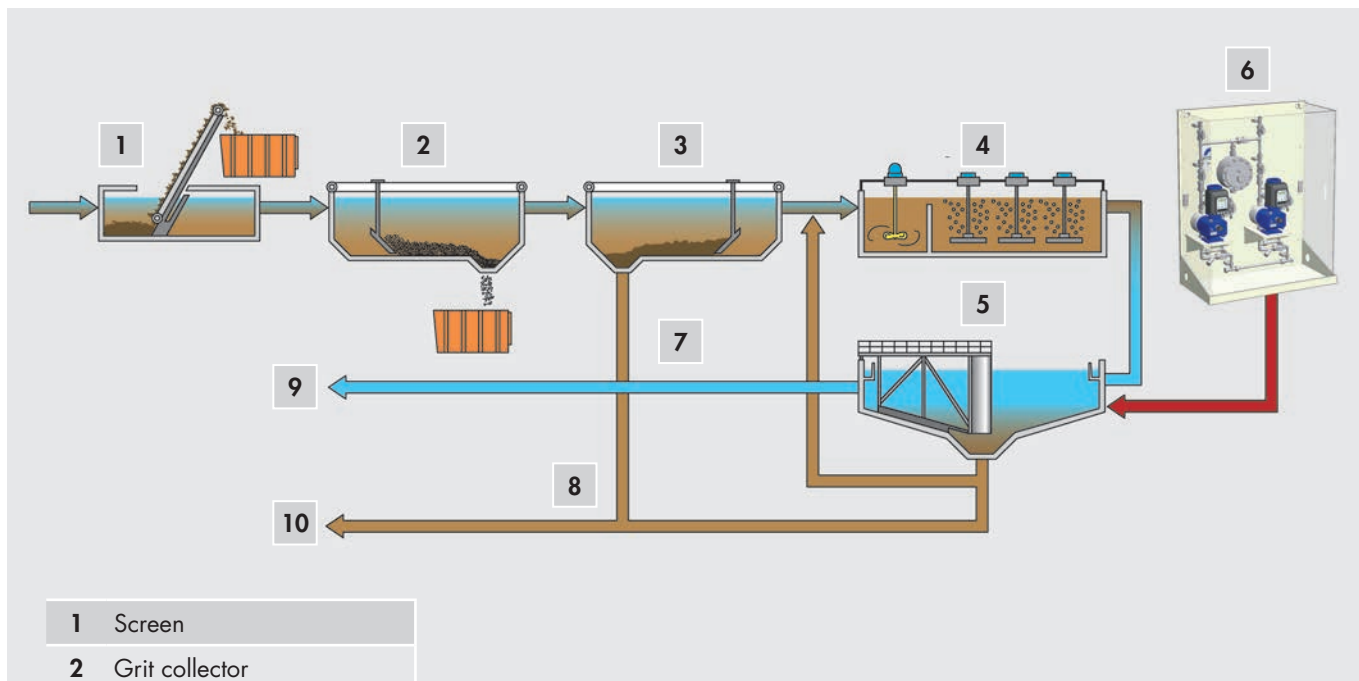
<sup>(2)</sup> Pump body with relief valve



# CHARACTERISTIC CHARTS



# APPLICATION EXAMPLE WASTE WATER TREATMENT



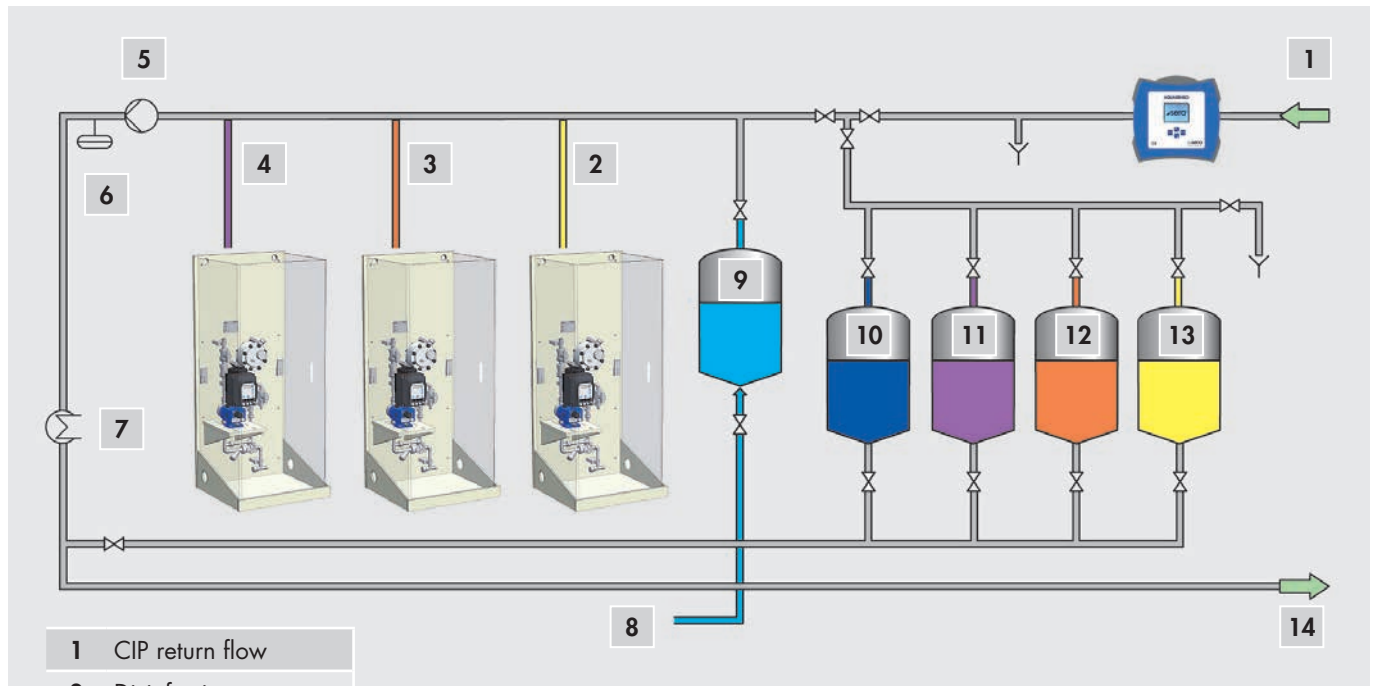
- 1 Screen
- 2 Grit collector
- 3 Primary settlement tank
- 4 Aeration tank
- 5 Secondary settlement tank
- 6 FeCl3 dosing
- 7 Return sludge
- 8 Sludge
- 9 Waters
- 10 Digestion tower





# APPLICATION EXAMPLE

## DOSING OF CLEANING AGENTS



1 CIP return flow

2 Disinfection

3 Acid

4 Alkaline solution

5 Flow pump

6 Volume meter

7 Heat exchanger

8 Fresh water supply

9 Fresh water

10 Stack water

11 Alkaline solution

12 Acid

13 Disinfection

14 CIP flow





# TECHNICAL DATA

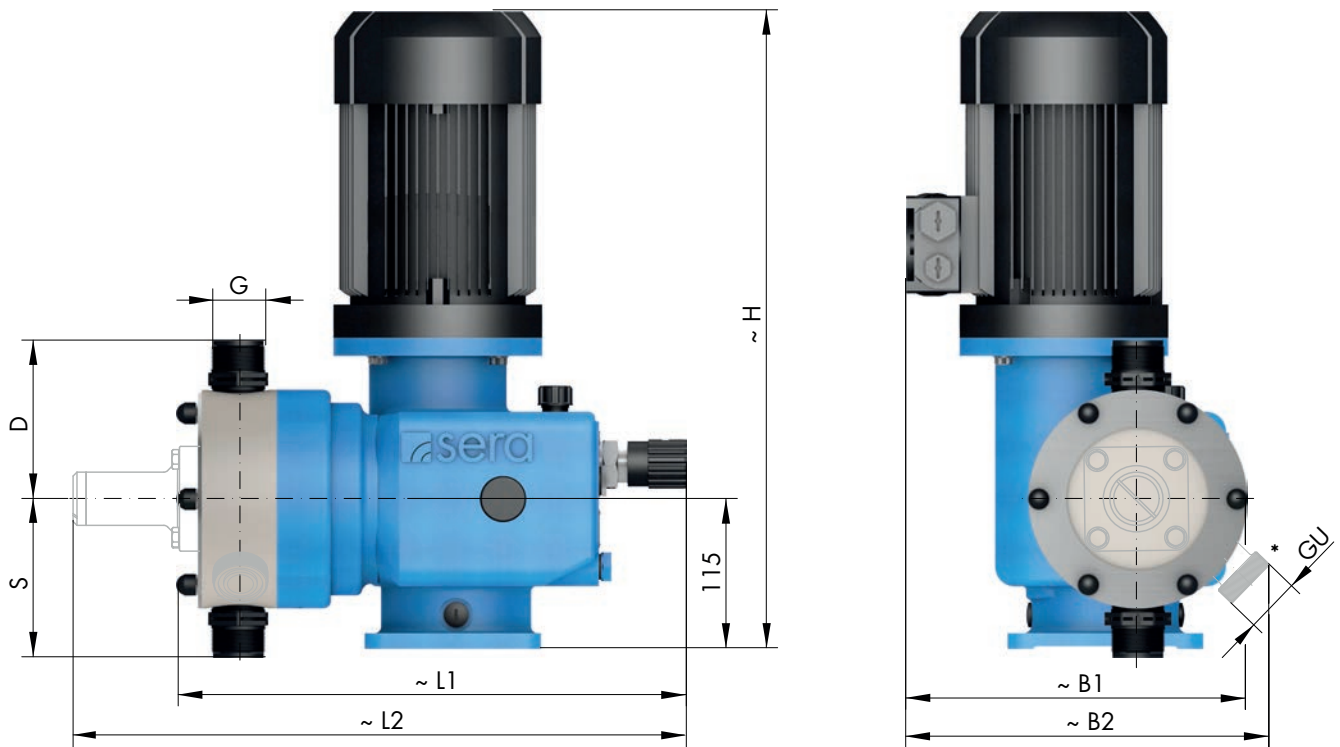
## DIAPHRAGM PUMP RF410.2

PUMP DATA		RF 410.2-...				
		280e	570e	900e	1450e	
Permissible pressure $p_{2max}$ at the pump outlet	bar	8	6	5	5 *	
Nominal capacity QN at $p_{2max}$	l/h	50 Hz	0-280	0-570	0-900	0-1.450
		60 Hz	0-336	0-684	0-1.080	0-1.740
Quantity per stroke	ml/stroke (100%)	46	98	155	245	
Max. suction height	mWC	5	5	3	3	
Min./max. permissible pressure at the pump inlet	bar $p_{1min/max}$	-0,5/0	-0,5/0	-0,3/0	-0,3/0	
Recommended nominal diameter DN of the connecting pipes	mm	15	15	20	25	
Nominal stroke frequency	1/min	50 Hz	97	97	97	97
		60 Hz	116	116	116	116
Weight approx.	kg	plastic	35	35	37	41
		stainless steel	42	42	52	59

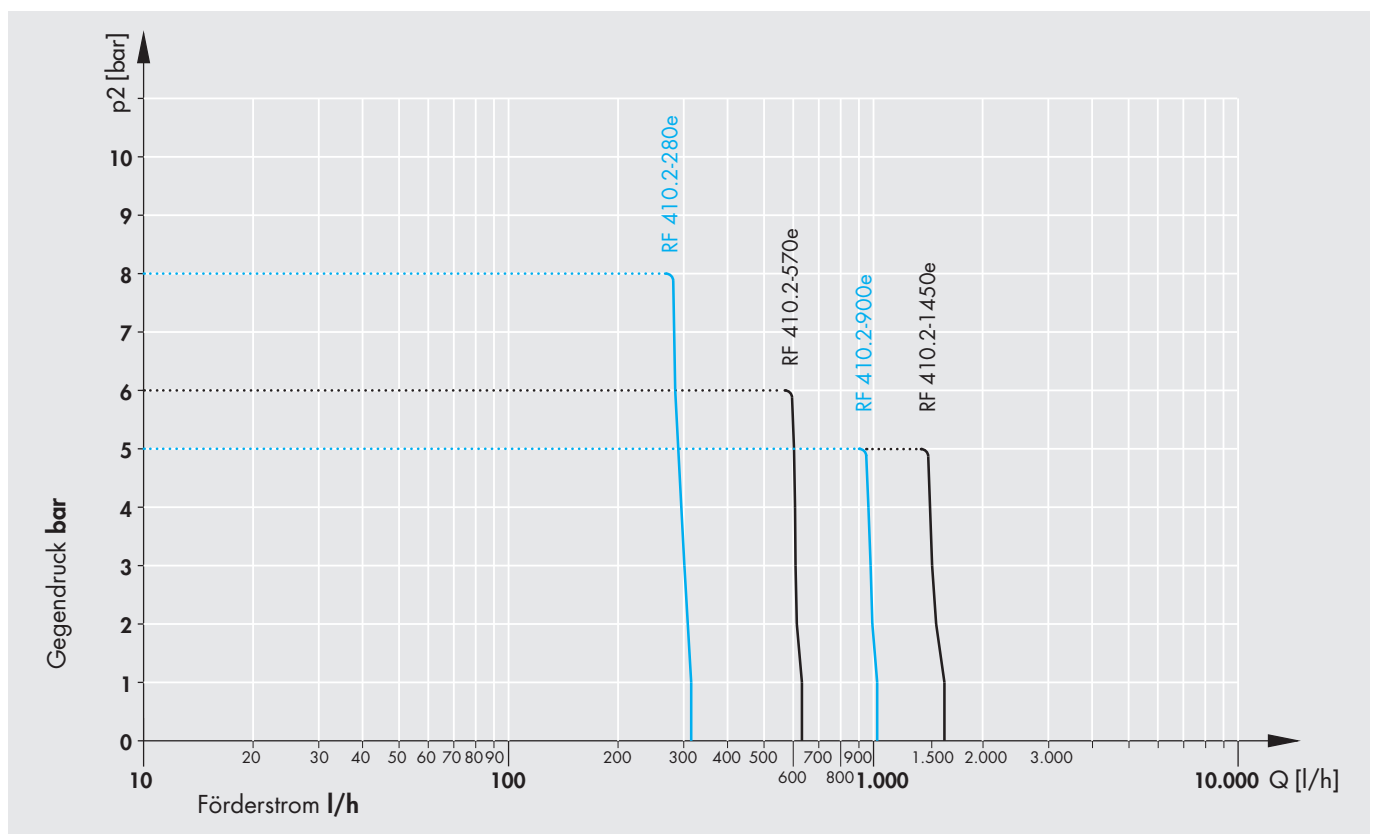
\* at 60 Hz is the permissible pressure 3,5 bar

ELECTRICAL DATA		RF 410.2-...			
		280e	570e	900e	1450e
Power consumption	kW	0,75	0,75	1,1	1,5
Voltage	V	230/400V 50Hz, 460V 60Hz			
Frequency	Hz	50/60			
Insulation class	ISO	F			
Enclosure	IP	55			

# DIMENSIONS



# CHARACTERISTIC CHARTS



# DIMENSIONS

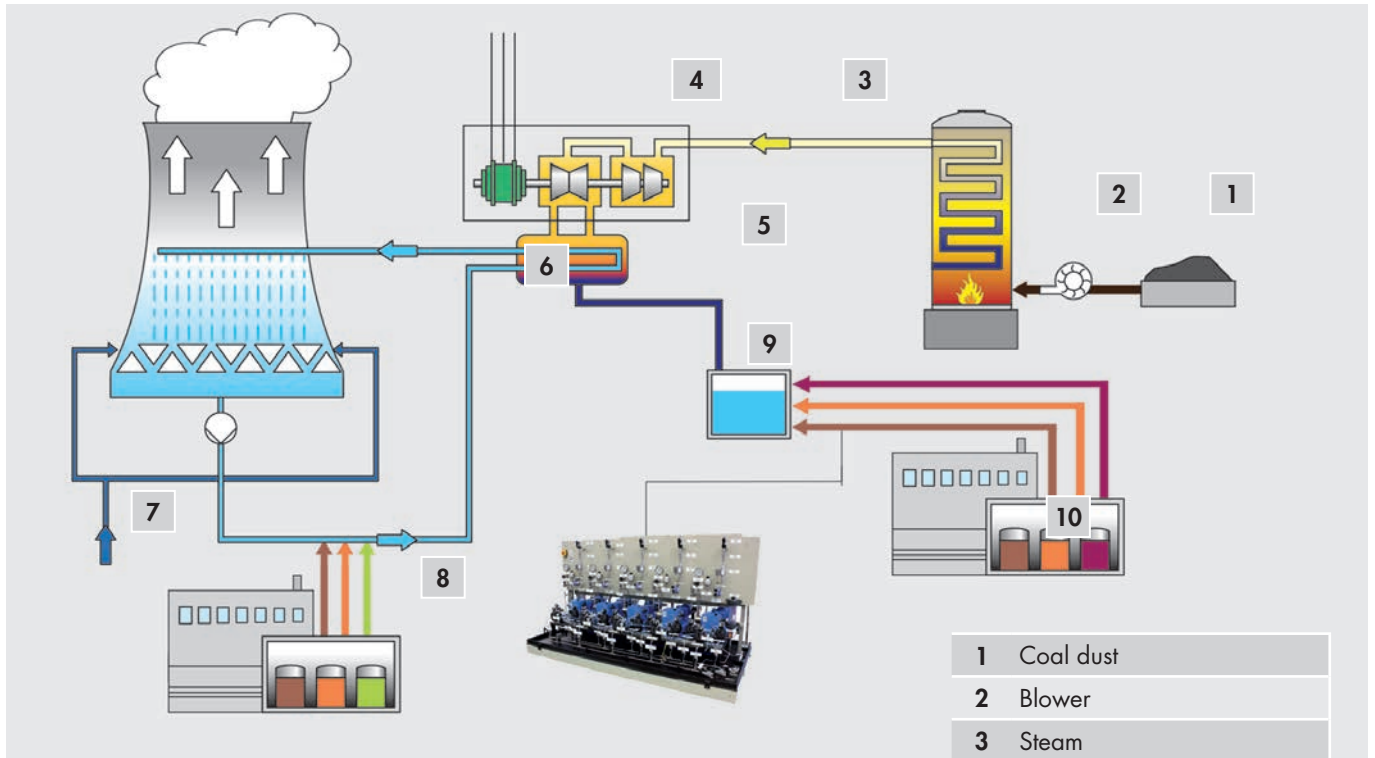
		RF 410.2-...			
SUCTION VALVES		...280e	...570e	...900e	...1450e
<b>DN</b>	Nominal width	20 <sup>(1)</sup>	20 <sup>(1)</sup>	20	20
<b>G</b>	Connection thread	G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	G1¼	G1¼
<b>S</b>	PP-FRP / PVDF-FRP	122	122	148	148
<b>S</b>	PVC-U	119	119	150	150
<b>S</b>	1.4571	122	122	148	148
PRESSURE VALVES					
<b>DN</b>	Nominal width	20 <sup>(1)</sup>	20 <sup>(1)</sup>	20	20
<b>G</b>	Connection thread	G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	G1¼	G1¼
<b>D</b>	PP-FRP / PVDF-FRP	122	122	148	148
<b>D</b>	PVC-U	138	138	170	170
<b>D</b>	1.4571	122	122	148	148
MAX. TOTAL HEIGHT					
<b>H</b>		530	530	540	580
MAX. TOTAL WIDTH					
<b>B1</b>		265	265	295	295
<b>B2</b>	(with relief valve)	280	280	–	–
MAX. TOTAL LENGTH					
<b>L1</b>		430	430	460	460
<b>L2</b>	(with relief valve)	535	535	–	–
RELIEF VALVE CONNECTION					
<b>GU</b>		G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	–	–

(Measurements in mm)

<sup>(1)</sup>DN15 / G1 at valves of PVC-U

# APPLICATION EXAMPLE

## TREATMENT OF FEED WATER IN POWER PLANT ENGINEERING





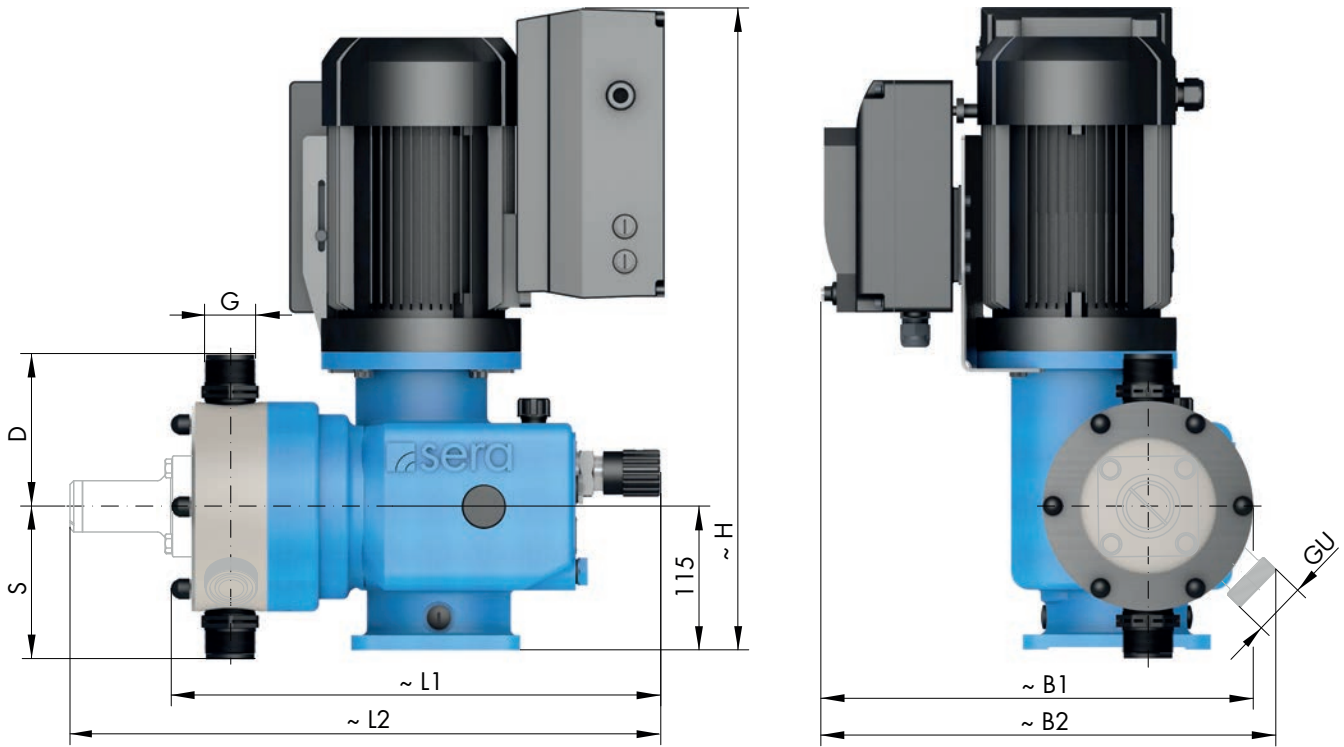
# TECHNICAL DATA

## DIAPHRAGM PUMP C410.2

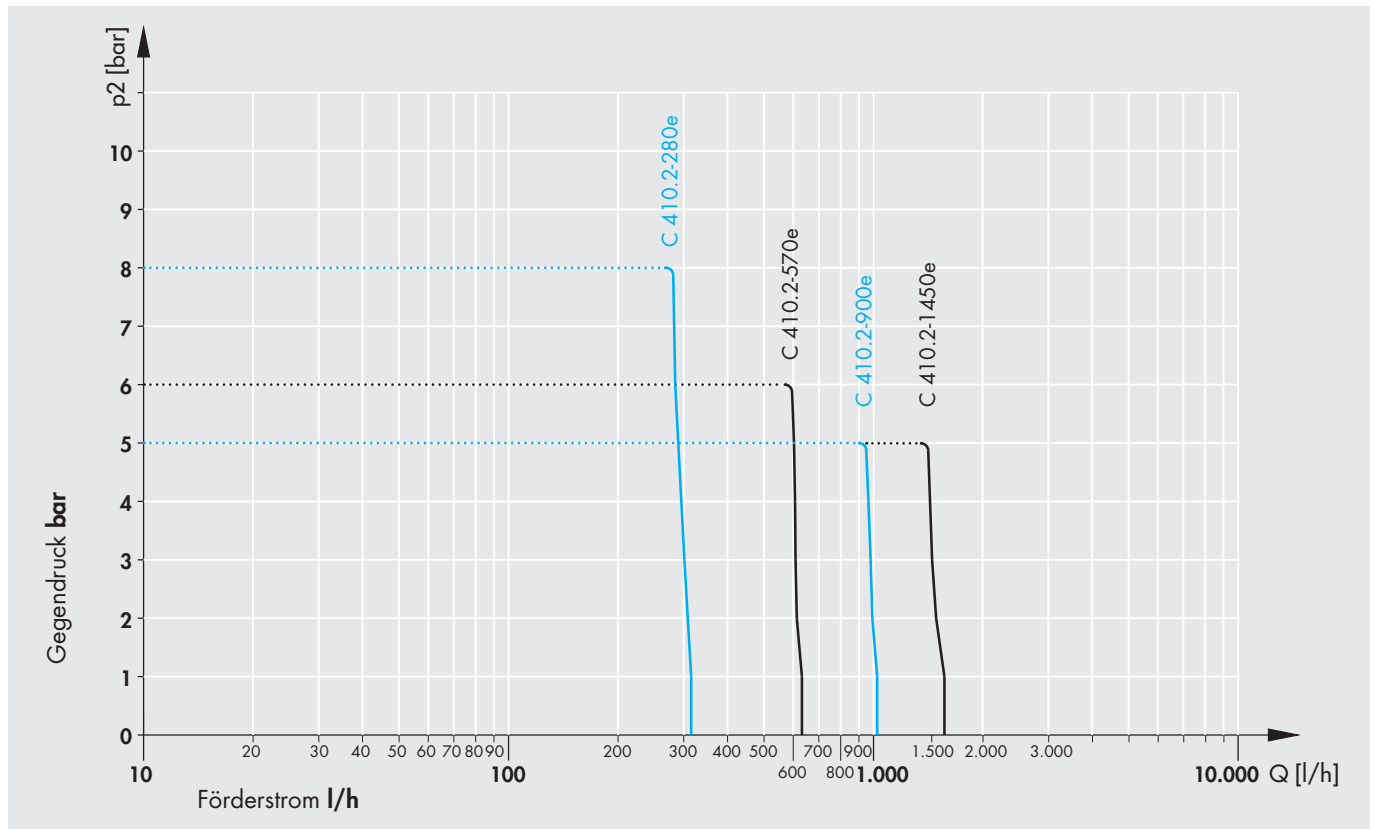
PUMP DATA			C 410.2-...			
			280e	570e	900e	1450e
Permissible pressure $p_{2max}$ at the pump outlet	bar		8	6	5	5
Nominal capacity QN at $p_{2max}$	l/h	50/60 Hz	0-280	0-570	0-900	0-1.450
Quantity per stroke	ml/stroke (100%)		46	98	155	245
Max. suction height	mWC		5	5	3	3
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,5/0	-0,5/0	-0,3/0	-0,3/0
Recommended nominal diameter DN of the connecting pipes	mm		15	15	20	25
Nominal stroke frequency	1/min	50 Hz	97	97	97	97
Weight approx.	kg	plastic	38	38	49	49
		stainless steel	45	45	64	64

ELECTRICAL DATA			C 410.2-...			
			280e	570e	900e	1450e
Power consumption	kW		0,75	0,75	1,5	1,5
Voltage	V		380-420			
Frequency	Hz		50/60			
Inlet voltage, control input	V DC		5...30			
Minimum contact signal time	ms		55			
Analogue input resistance	$\Omega$		100			
Digital output internal/external supply			max. 15V DC, 50mA /max. 30V DC, 350mA			
Recommended fuse	(circuit breaker)		C10A			
Insulation class	ISO		F			
Enclosure	IP		55			

# DIMENSIONS



# CHARACTERISTIC CHARTS



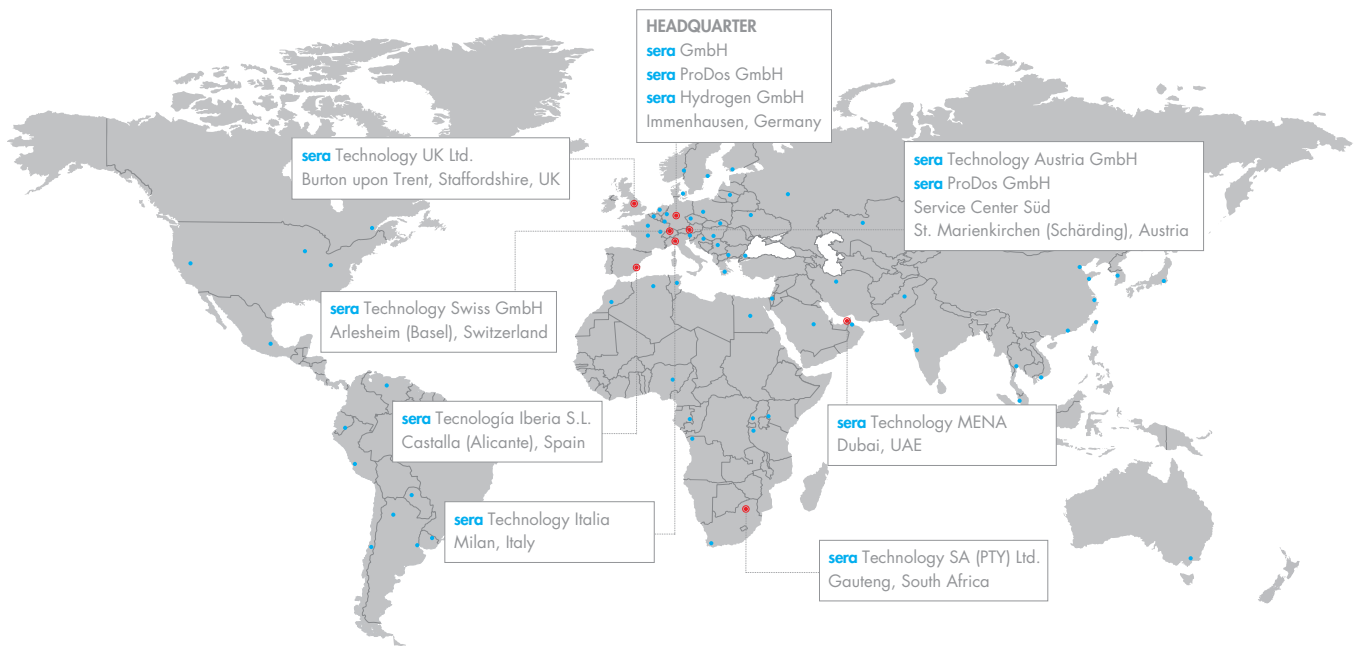
# DIMENSIONS

		C 410.2-...			
SUCTION VALVES		...280e	...570e	...900e	...1450e
<b>DN</b>	Nominal width	20 <sup>(1)</sup>	20 <sup>(1)</sup>	20	20
<b>G</b>	Connection thread	G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	G1¼	G1¼
<b>S</b>	PP-FRP / PVDF-FRP	122	122	148	148
<b>S</b>	PVC-U	119	119	150	150
<b>S</b>	1.4571	122	122	148	148
PRESSURE VALVES					
<b>DN</b>	Nominal width	20 <sup>(1)</sup>	20 <sup>(1)</sup>	20	20
<b>G</b>	Connection thread	G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	G1¼	G1¼
<b>D</b>	PP-FRP / PVDF-FRP	122	122	148	148
<b>D</b>	PVC-U	138	138	170	170
<b>D</b>	1.4571	122	122	148	148
MAX. TOTAL HEIGHT					
<b>H</b>		530	530	580	580
MAX. TOTAL WIDTH					
<b>B1</b>		355	355	380	380
<b>B2</b>	(with relief valve)	365	365	–	–
MAX. TOTAL LENGTH					
<b>L1</b>		430	430	460	460
<b>L2</b>	(with relief valve)	535	535	–	–
RELIEF VALVE CONNECTION					
<b>GU</b>		G1¼ <sup>(1)</sup>	G1¼ <sup>(1)</sup>	–	–

(Measurements in mm)

<sup>(1)</sup>DN15 / G1 at valves of PVC-U

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