

SERIES 4 MULTI-LAYER DIAPHRAGM PUMPS



High reliability

MULTI-LAYER DIAPHRAGM PUMPS

MAXIMUM PROCESS RELIABILITY

sera multi-layer diaphragm pumps operate according to the same function principle as the conventional diaphragm pump, i.e. the oscillating diaphragm is mechanically controlled using a push rod resulting in the dosing medium being conveyed.

APPLICATIONS

- Cleaning in place
- Waste water treatment
- Exhaust gas treatment

MULTI-LAYER DIAPHRAGMS

Due to the use of the multi-layer diaphragms, safety-related demanding dosing tasks can be realised. The increased safety requirements are taken into account by, in comparison with single-layer diaphragms, significantly improved diaphragm service lives and the diaphragm monitoring (pressure switch, manometer etc.).

MULTI-LAYER DIAPHRAGM PACKAGE

This consists of three PTFE diaphragms. If the working diaphragm is damaged, this concept with the pressure-controlled diaphragm monitoring as standard ensures absolute leak tightness. Damage to the working membrane does not result in any direct failure of the dosing pump.

OVERVIEW OF ADVANTAGES

- High operational reliability due to multi-layer diaphragm technology
- Display of the diaphragm state using integrated diaphragm rupture monitoring (visually as standard / electrically optional)
- Excellent suction performance without additional components
- Can be used in explosion-protected areas using optional equipment variants

CONTROLLABLE VARIANT

- Future-proof pump concept due to integrated, multi-functional control electronics
- Easy start-up due to "Plug&Dose"
- High application reliability for viscous media due to Slow Mode technology



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, 1.4571, PP-GFP, PVDF-GFP, titanium, Hastelloy

VALVE BALLS

PTFE, 1.4401, Hastelloy

VALVE SEALS

EPDM, FPM, FEP-coated

DRIVE DIAPHRAGMS

PTFE (3-layer)

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.

REGULATION

The flow rate of the **sera** multi-layer diaphragm pumps is constant or continuously adjustable.

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

The stroke length of the push rod is changed here so that the diaphragm is not completely pulled back. This results in a lower delivery volume per stroke.

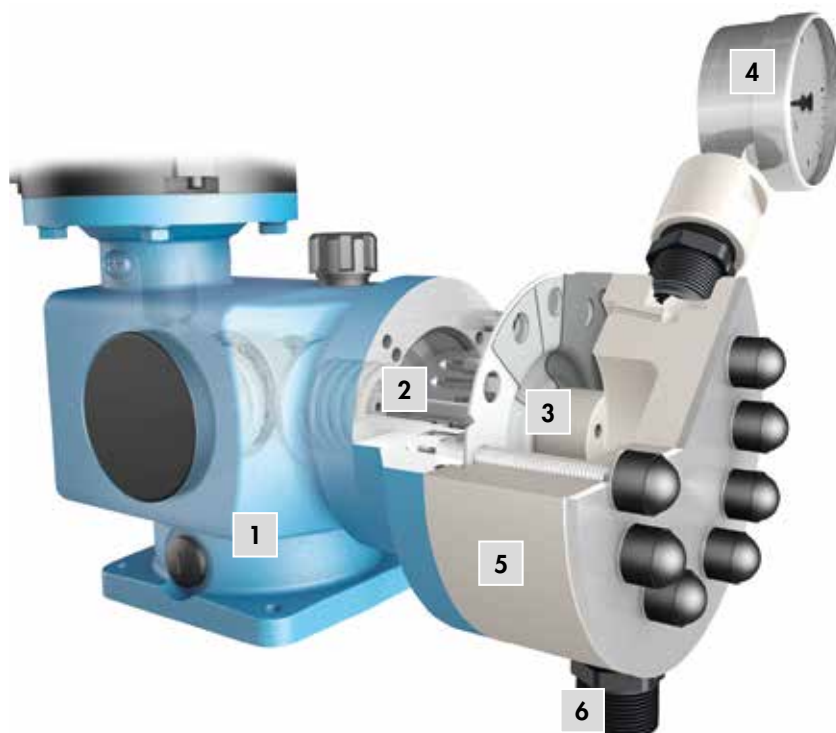
SPECIAL VERSIONS

We provide the individual solution for special dosing tasks:

Among other things, valves as double valves, with spring loading, attachment of stroke counter, electric actuators.

ACCESSORIES

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



1 Stroke gearing

2 Push rod

3 Multi-layer diaphragm package

- Working diaphragms
- Signal diaphragms
- Protective diaphragms

4 Diaphragm rupture monitoring using

- Manometer (RF4xx.2 - ...ML)
- Pressure switch (C4xx.2 - ...ML)

5 Pump body

6 Suction valve

ADDITIONAL FEATURES



CONTROL ELECTRONICS

The control electronics have many advantages such as the possibility to actuate externally via an interface, batch programming or the constant monitoring of diaphragm, 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.



FREQUENCY CONVERTER

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

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.

Depending on the required delivery volume, the actuator then screws the adjusting spindle in and out.



ADDITIONAL FEATURES



VISUAL DIAPHRAGM MONITORING WITH MANOMETER

In the case of any damage of the working diaphragms, the pressurised medium flows through a hole to the signal manometer and causes a pointer deflection. The pump can continue to operate thanks to the multi-layer diaphragms.

DIAPHRAGM MONITORING WITH PRESSURE SWITCH

In the case of any damage of the working diaphragms, a pressure is generated at the pressure switch. The pending signal can then be processed. The pump can continue to operate thanks to the multi-layer diaphragms.



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 an evaluation unit.

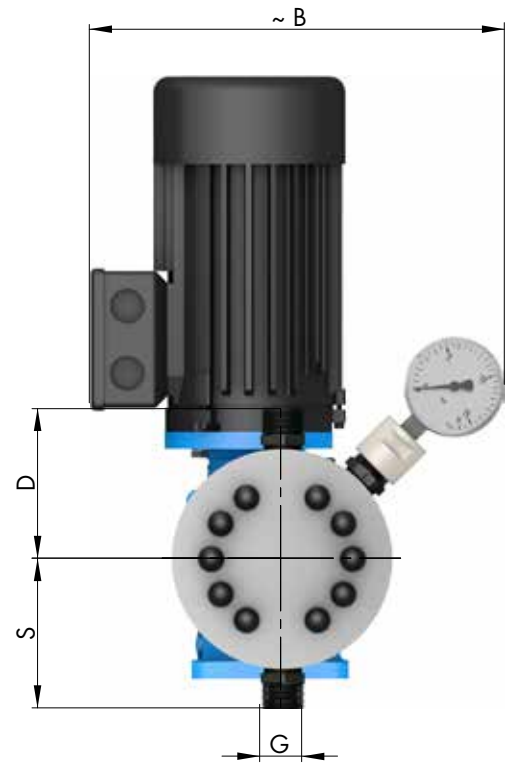
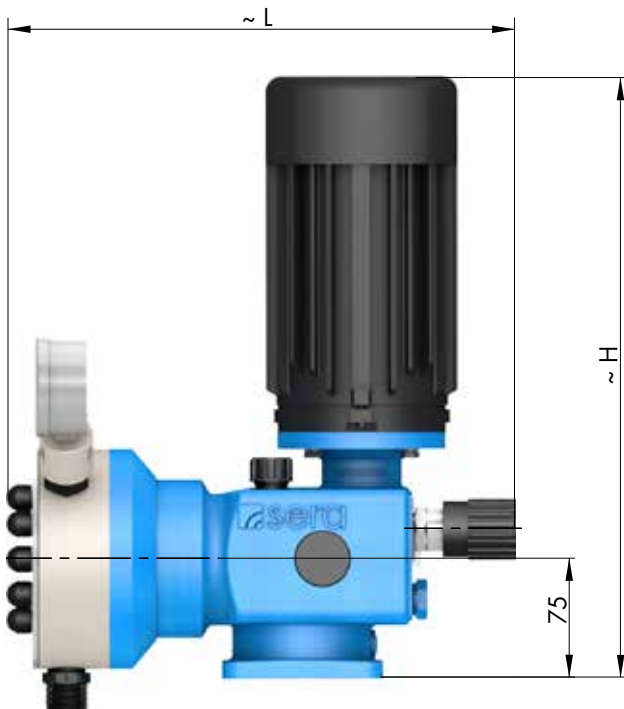
TECHNICAL DATA

MULTI-LAYER DIAPHRAGM PUMP RF409.2 - ML

PUMP DATA			RF 409.2-...				
			...11 ML	...17 ML	...45 ML	...110 ML	...220 ML
Permissible pressure p_{2max} at the pump outlet	bar	plastic	10*	10*	10*	10	4
		stainless steel	20	20	16		
Nominal capacity QN at p_{2max}	l/h	50 Hz	0-11	0-17	0-45	0-110	0-220
		60 Hz	0-13	0-20	0-54	0-132	0-264
Quantity per stroke	ml/stroke (100%)		1,8	1,8	5	12,2	24
Max. suction height	mWC		3	3	3	3	3
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,3/0	-0,3/0	-0,3/0	-0,3/0	-0,3/0
Recommended nominal diameter DN of the connecting pipes	mm		10	10	10	15	15
Nominal stroke frequency	1/min	50 Hz	100	150	150	150	150
		60 Hz	120	180	180	180	180
Weight approx.	kg	plastic	14	14	15	16	18
		stainless steel	16	16	17	18	24

ELECTRICAL DATA		RF 409.2-... ML
Power consumption	kW	0,37
Voltage	V	340-420
Frequency	Hz	50/60
Insulation class	ISO	F
Enclosure	IP	55

DIMENSIONS



		RF 409.2-...				
SUCTION VALVES		...11 ML	...17 ML	...45 ML	...110 ML	...220 ML
DN	Nominal width	5	5	8	8	20 ⁽¹⁾
G	Connection thread	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G1 ¹ / ₄ ⁽¹⁾
S	PP-FRP / PVDF-FRP	83	83	90	94	127
S	PVC-U	88	88	93	97	124
S	1.4571	83	83	91	95	127
PRESSURE VALVES						
DN	Nominal width	5	5	8	8	20 ⁽¹⁾
G	Connection thread	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G1 ¹ / ₄ ⁽¹⁾
D	PP-FRP / PVDF-FRP	83	83	90	94	127
D	PVC-U	88	88	100	104	143
D	1.4571	83	83	91	95	127
MAX. TOTAL HEIGHT						
H		380	380	380	380	380
MAX. TOTAL WIDTH						
B		275	275	279	282	296
MAX. TOTAL LENGTH						
L		323	323	323	327	344

(Measurements in mm)

⁽¹⁾ DN15 / G1 at valves of PVC-U

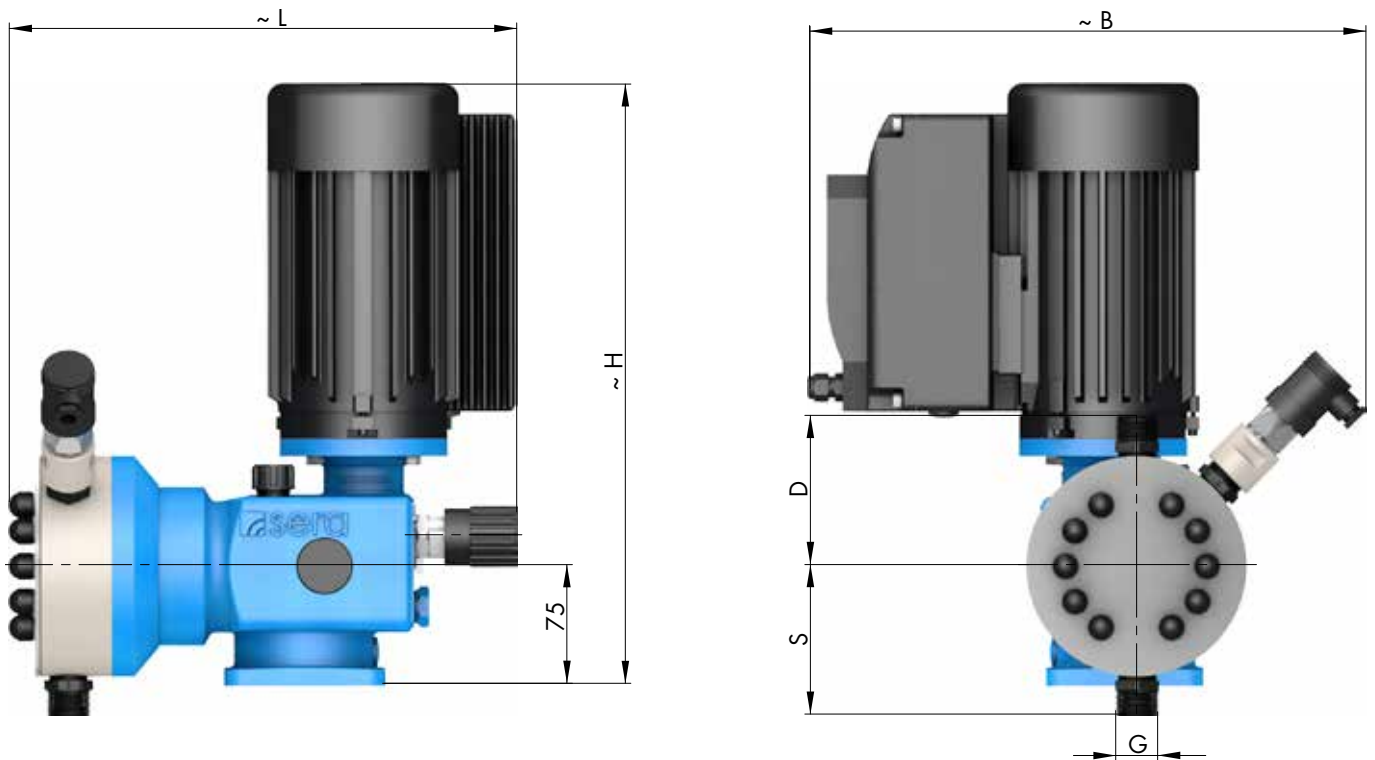
TECHNICAL DATA

MULTI-LAYER DIAPHRAGM PUMP C409.2 - ML

PUMP DATA			C 409.2-...				
			...11 ML	...17 ML	...45 ML	...110 ML	...220 ML
Permissible pressure $p_{2max.}$ at the pump outlet	bar	plastic	10	10	10	10	4
		stainless steel	20	20	16		
Nominal capacity QN at $p_{2max.}$	l/h	50 Hz	0-11	0-17	0-45	0-110	0-220
		60 Hz	0-13	0-20	0-54	0-132	0-264
Quantity per stroke	ml/stroke (100%)		1.8	1.8	5	12.2	24
Max. suction height	mWC		3	3	3	3	3
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0.3/0	-0.3/0	-0.3/0	-0.3/0	-0.3/0
Recommended nominal diameter DN of the connecting pipes	mm		10	10	10	15	15
Nominal stroke frequency	1/min	50 Hz	100	150	150	150	150
		60 Hz	120	180	180	180	180
Weight approx.	kg	plastic					
		stainless steel					

ELECTRICAL DATA		C 409.2-... ML	
		230 V, 50/60 Hz	115 V, 50/60 Hz
Power consumption	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	Ω		39
Digital output internal/external supply			PNP max. 24V DC, 30mA /max. 30V DC, 30mA
Recommended fuse	(circuit breaker)	C6A	C10A
Insulation class	ISO		F
Enclosure	IP		55

DIMENSIONS



		C 409.2-...				
SUCTION VALVES		...11 ML	...17 ML	...45 ML	...110 ML	...220 ML
DN	Nominal width	5	5	8	8	20 ⁽¹⁾
G	Connection thread	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G1 ¹ / ₄ ⁽¹⁾
S	PP-FRP / PVDF-FRP	83	83	90	94	127
S	PVC-U	88	88	93	97	124
S	1.4571	83	83	91	95	127
PRESSURE VALVES						
DN	Nominal width	5	5	8	8	20 ⁽¹⁾
G	Connection thread	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G1 ¹ / ₄ ⁽¹⁾
D	PP-FRP / PVDF-FRP	83	83	90	94	127
D	PVC-U	88	88	100	104	143
D	1.4571	83	83	91	95	127
MAX. TOTAL HEIGHT						
H		380	380	380	380	380
MAX. TOTAL WIDTH						
B		351	351	355	359	373
MAX. TOTAL LENGTH						
L		323	323	323	327	344

(Measurements in mm)

⁽¹⁾ DN15 / G1 at valves of PVC-U

TECHNICAL DATA

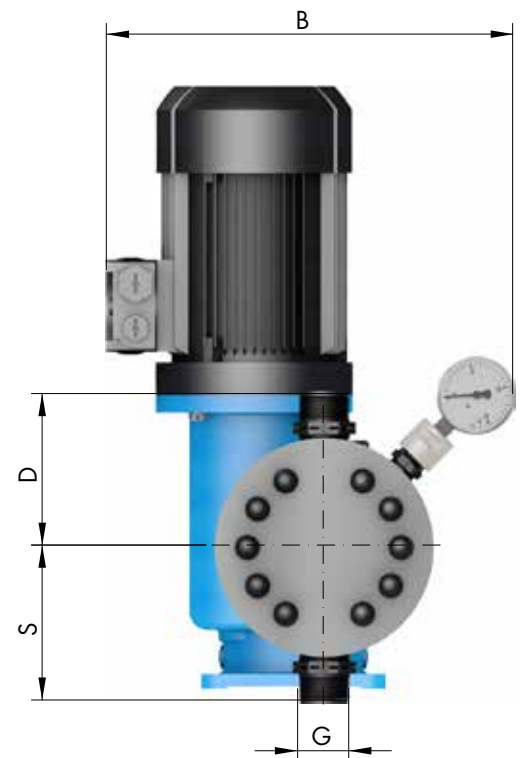
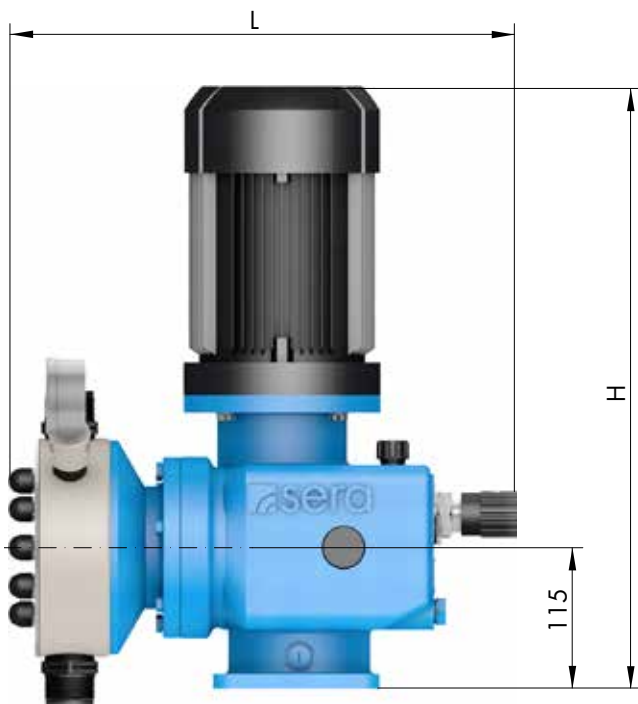
MULTI-LAYER DIAPHRAGM PUMP RF410.2 - ML

PUMP DATA			RF 410.2-135 ML	RF 410.2-500 ML	RF 410.2-1200 ML
Permissible pressure $p_{2max.}$ at the pump outlet	bar	plastic	10	10	5 *
		stainless steel	15		
Nominal capacity QN at $p_{2max.}$	l/h	50 Hz	0-135	0-500	0-1200
		60 Hz	0-162	0-600	0-1440
Quantity per stroke	ml/stroke (100%)				
Max. suction height	mWC		3	3	3
Min./max. permissible pressure at the pump inlet	bar	$P_{1min/max}$	-0,3/0	-0,3/0	-0,3/0
Recommended nominal diameter DN of the connecting pipes	mm		15	15	20
Nominal stroke frequency	1/min	50 Hz	97	97	97
		60 Hz	116	116	–
Weight approx.	kg	plastic	36	38	41
		stainless steel	43	46	57

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

ELECTRICAL DATA		RF 410.2-135 ML	RF 410.2-500 ML	RF 410.2-1200 ML
Power consumption	kW	0,75	0,75	1,5
Nominal voltage	V	3 ~ 380 - 420		
Frequency	Hz	50/60		
Insulation class	ISO	F		
Enclosure	IP	55		

DIMENSIONS



SUCTION VALVES	RF 410.2-135 ML	RF 410.2-500 ML	RF 410.2-1200 ML
DN Nominal width	20 ⁽¹⁾	20 ⁽¹⁾	20
G Connection thread	G1¼ ⁽¹⁾	G1¼ ⁽¹⁾	G1¼
S PP-FRP / PVDF-FRP	127	138	162
S PVC-U	124	132	172
S 1.4571	127	138	162
PRESSURE VALVES			
DN Nominal width	20 ⁽¹⁾	20 ⁽¹⁾	20
G Connection thread	G1¼ ⁽¹⁾	G1¼ ⁽¹⁾	G1¼
D PP-FRP / PVDF-FRP	127	138	162
D PVC-U	143	151	192
D 1.4571	127	138	162
MAX. TOTAL HEIGHT			
H	495	495	495
MAX. TOTAL WIDTH			
B	347	357	382
MAX. TOTAL LENGTH			
L	426	414	458

(Measurements in mm)

⁽¹⁾DN15 / G1 at valves of PVC-U

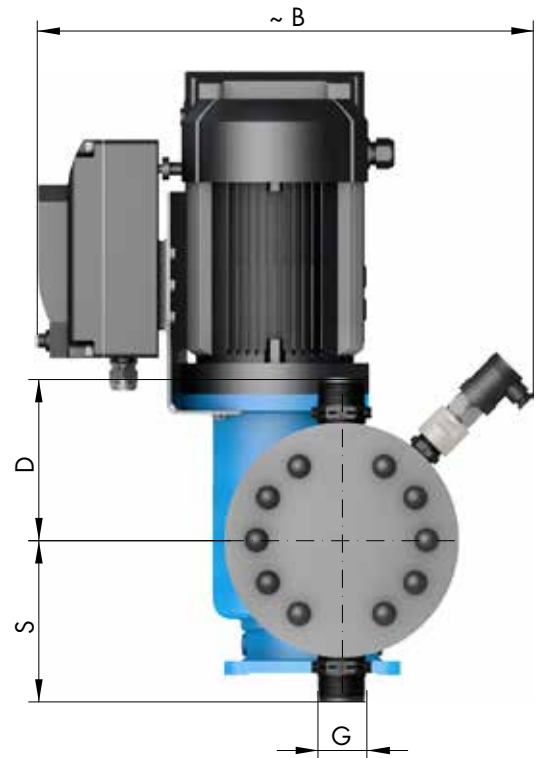
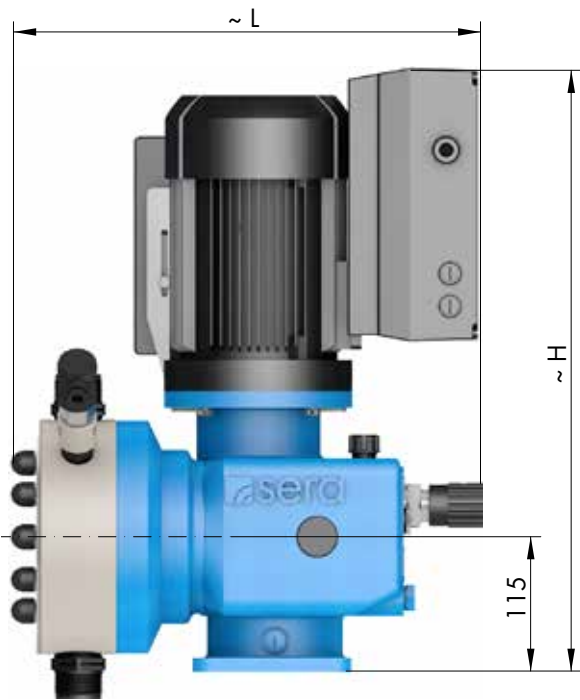
TECHNICAL DATA

MULTI-LAYER DIAPHRAGM PUMP C410.2 - ML

PUMP DATA		C 410.2-500 ML	
Permissible pressure at the pump outlet	bar	$p_{2max.}$	10
Nominal capacity QN at $p_{2max.}$	l/h	50/60 Hz	0-500
Quantity per stroke	ml/stroke (100%)		85,9
Max. suction height	mWC		3
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$	-0,3/0
Recommended nominal diameter DN of the connecting pipes	mm		15
Nominal stroke frequency	1/min	50/60 Hz	97
Weight approx.	kg	plastic	39
		stainless steel	47

ELECTRICAL DATA		C 410.2-500 ML	
Power consumption	kW		0,75
Voltage	V		3 ~ 380 - 420
Frequency	Hz		50/60
Inlet voltage, control input	V DC		5...30
Minimum contact signal time	ms		55
Analogue input resistance	Ω		100
Digital output internal/external supply			PNP max. 15V DC, 50mA /max. 30V DC, 350mA
Recommended fuse	(circuit breaker)		C10A
Insulation class	ISO		F
Enclosure	IP		55

DIMENSIONS



SUCTION VALVES		RF 410.2-500 ML
DN Nominal width		20 ⁽¹⁾
G Connection thread		G1¼ ⁽¹⁾
S PP-FRP / PVDF-FRP		138
S PVC-U		132
S 1.4571		138
PRESSURE VALVES		
DN Nominal width		20 ⁽¹⁾
G Connection thread		G1¼ ⁽¹⁾
D PP-FRP / PVDF-FRP		138
D PVC-U		151
D 1.4571		138
MAX. TOTAL HEIGHT		
H		520
MAX. TOTAL WIDTH		
B		433
MAX. TOTAL LENGTH		
L		414

(Measurements in mm)

⁽¹⁾DN15 / G1 at valves of PVC-U

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